STORES

THE BULLETIN OF THE N. R. D. G. A.

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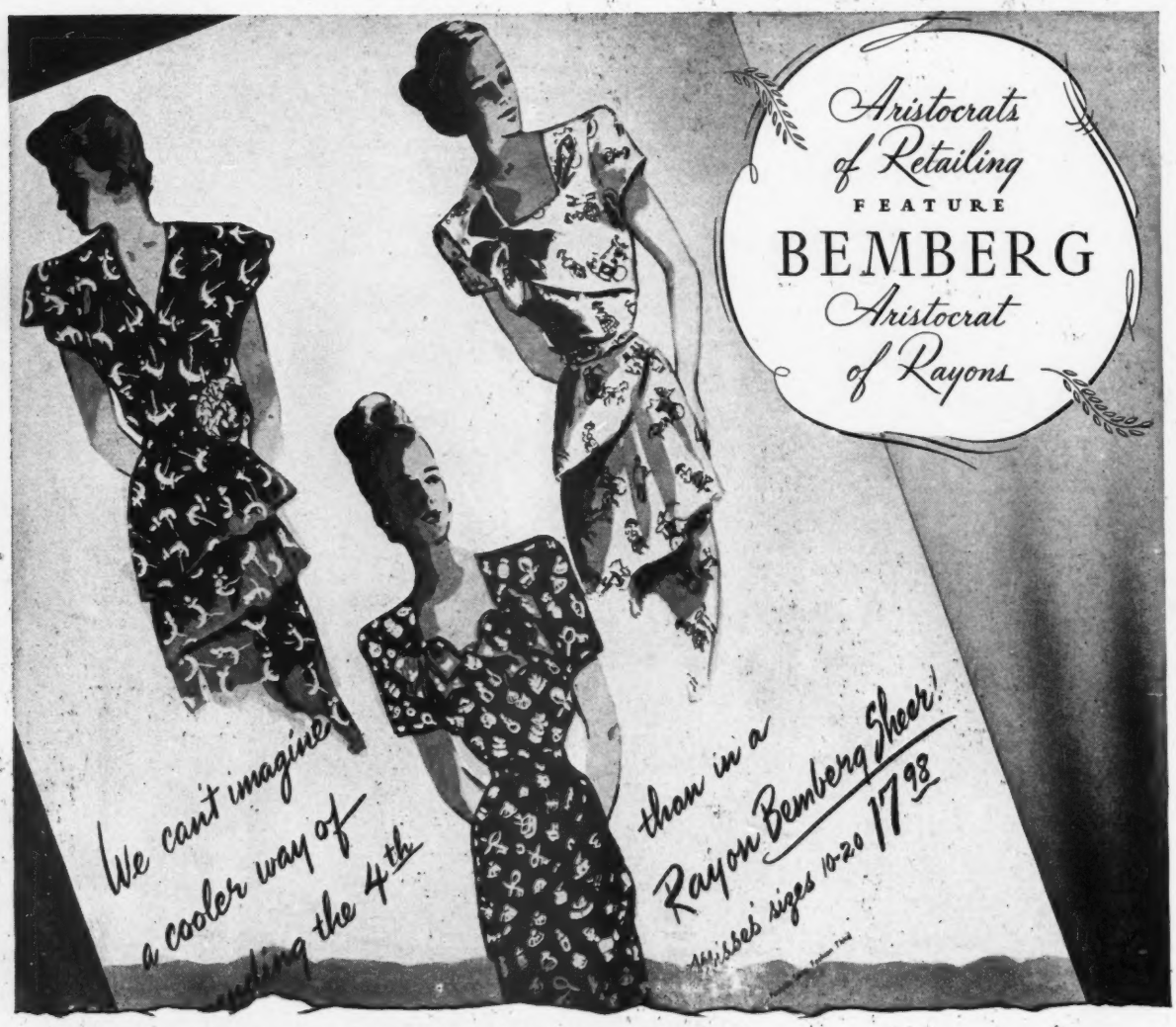

Aristocrats of Retailing
FEATURE
BEMBERG
Aristocrat of Rayons
We can't imagine a cooler way of spending the 4th
than in a Rayon Bemberg Sheer!
Misses' sizes 10-20 17.98

ATLANTA'S TEMPERATURE WAS A SULTRY 80°

...WHEN RICH'S AD SPONSORED A "COOL WAVE"

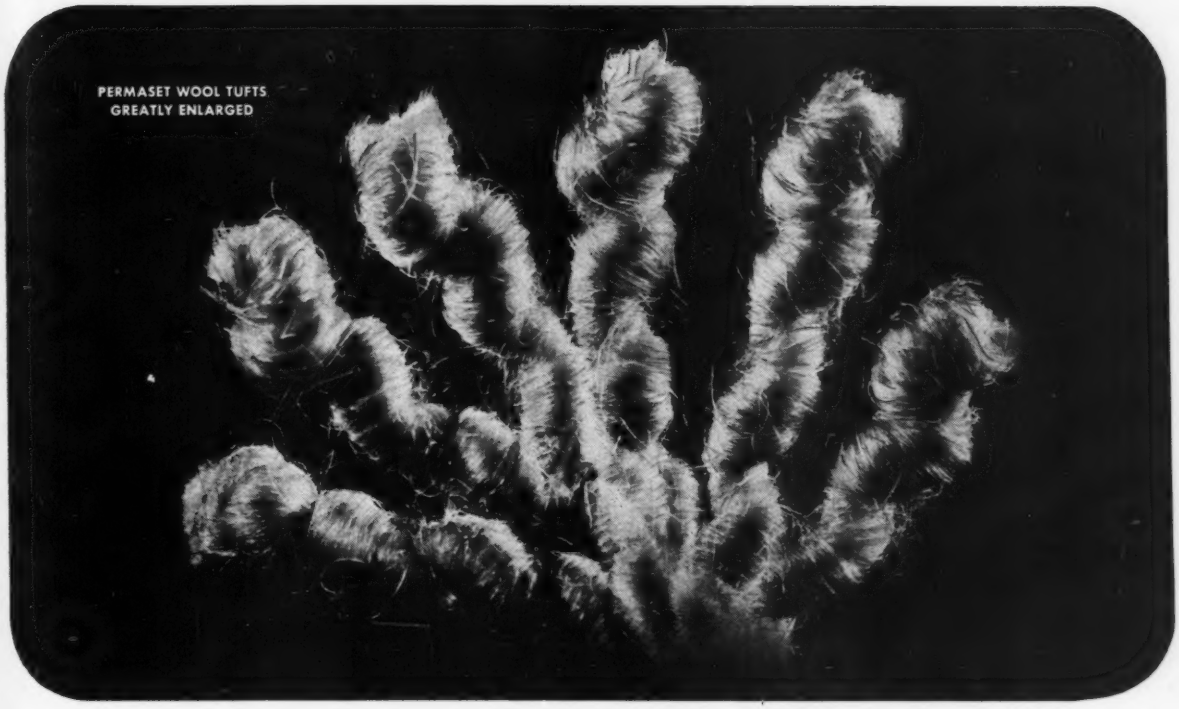
Like a snow-kissed mountain breeze, Rich's offering of cool Bemberg* rayon Sheers came like manna from heaven to Atlanta's sweltering femininity!

For Bemberg looks cool . . . feels cool . . . is cool! *Cool by test! Coolest of eleven summer textures tested on the Coolness Tester in the laboratories of the United States Testing Co.*

Plan to capitalize Bemberg's unique coolness in your own advertising and displays . . . feature the Bemberg Certified Tag as a symbol of "fair and cooler" to the women of your town!

AMERICAN Bemberg CORPORATION
261 Fifth Avenue, New York 16, N. Y.

*BEMBERG *is the registered trade-mark of the* AMERICAN BEMBERG CORPORATION

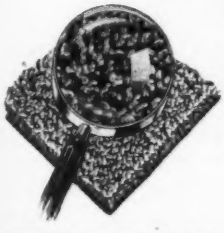


It's a new twist... it's a better twist
...it's *PERMASET

Once this rug tuft's twisted, it stays twisted. That's because of the new Bigelow PERMASET yarn process. PERMASET yarns are specially processed by a new Bigelow research development that gives them sensational new characteristics. Besides permanence of twist, PERMASET yarns retain their original texture and beauty even after repeated cleanings.

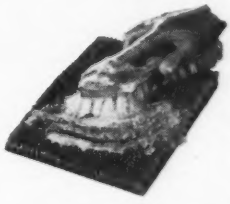
Trade-mark Reg. U. S. Pat. Off.

NEW SENSATIONAL TEXTURE DEVELOPMENTS POSSIBLE WITH PERMASET



Now, Bigelow Weavers combine their rug-making skill with this sensational new yarn to bring you these exciting new textures: CURLWEAVE—the distinctively different fabric that provides a lifetime of luxury underfoot; and GLENTWIST—a better twist carpet that has remarkable new qualities of wear.

SHAMPOOING, WASHING AND CLEANING NOW 100% SAFE WITH PERMASET



Carpets made with the new PERMASET yarn process offer rug customers just what they've been looking for—rugs that can be cleaned with perfect safety . . . without harming the texture or disturbing the twist. Carpets made with PERMASET keep their original texture longer. Because they have been specially treated, they're unaffected by cleanings.

WHEN IT'S PERMASET TWIST IT STAYS TWISTED

Many methods of twist setting have been used for years in the preparation of wools for weaving. Now Bigelow's Product Research & Development Department has come through with an entirely new and successful process. The PERMASET process pre-conditions yarns for wear so they'll keep their twist . . . hold their original textures.

THE LABEL THAT STANDS FOR FIRSTS IN RUG AND CARPET DEVELOPMENT

BIGELOW WEAVERS

This familiar label . . . in blue and gold . . . is attached to every Bigelow rug and carpet, appears in all advertising, as a symbol of the skill of Bigelow weavers . . . of Bigelow's promise to dealers and consumers alike to constantly strive for improvements in rug-making . . . to maintain the highest standards and lead the field . . . *always.*

. . . IF IT'S PERMASET IT'S BIGELOW

BIGELOW-SANFORD CARPET CO., INC. • 140 MADISON AVE., NEW YORK 16, N. Y.

STORES (The Bulletin of the National Retail Dry Goods Association) March, 1947, Volume 29, No. 3. Issued monthly by the National Retail Dry Goods Association, 100 West 31st Street, New York. $3.00 per year available to members of the National Retail Dry Goods Association only. Reentered as second class matter, March 6, 1947, at the Post Office at New York, N. Y. under the act of March 3, 1879.
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...the wheat from the chaff...

The dynamics of a buyer's year will automatically separate the wheat from the chaff.

The sales-wise merchandisers know the most potent selling tool in any market.

They know that in Northern California—it's The San Francisco Examiner, for 60 years Newspaper Number One in its marketing area.

THE SAN FRANCISCO

Examiner

NEWSPAPER NUMBER ONE

NATIONALLY REPRESENTED BY THE HEARST ADVERTISING SERVICE

MARCH, 1947

STORES

THE BULLETIN OF THE N. R. D. G. A.

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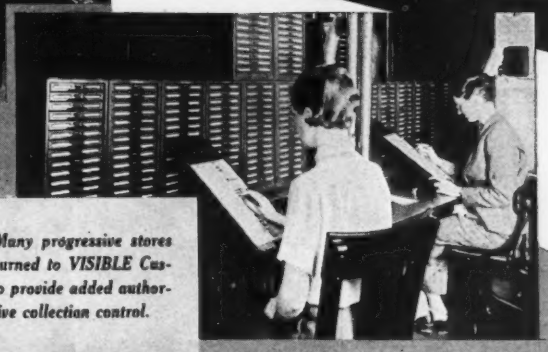
HELEN K. MULHERN, *Editor*; JOHN HAHN, *Advertising Manager*; H. O. BELL, *Promotion Manager*; BERNARD CORRIGAN, MILDRED JOHNSEN, *Associates*. STORES is published monthly by the National Retail Dry Goods Association, LEW HAHN, *President and General Manager*. Publication office, 100 West 31st Street, New York 1, New York.

the 20's *Increasing volume of charge accounts made faster credit authorization a necessity, led to adoption of VISIBLE indexing equipment with signalled "refers".*

For Three Decades VISIBLE SYSTEMS have simplified and speeded Customer Accounting and Credit Procedures



the 30's *Many progressive stores turned to VISIBLE Customer History Records to provide added authorization speed and positive collection control.*

the 40's *Cycle Billing, the integrated plan for speedy authorization and simplified collection control, proves most efficient with VISIBLE filing of posting media within the cycle period.*

THE introduction of Cycle-Matic Billing, with VISIBLE filing of customers' bills and other posting media for the cycle period, is the logical climax of Remington Rand's pioneering of profit-building innovations in retail credit control.

The superiority of authorization from VISIBLE files over vertical filing or ledger records has been proved over and over! Delays and slowed service to customers due to lost or misfiled cards—so common with the "blind" system—are now a thing of the past. With Cycle Billing in its seventh year of successful, expanding operation, the VISIBLE principle is yielding more speed, greater economy, still higher operating efficiency. Visible Unified Credit Records enable you to *realize the full potential of this unique system.*

Why not take advantage of Remington Rand's three-decade specialization in VISIBLE records for Retail Credit Accounting? Whether you authorize from a primary index or directly from the unified credit record, VISIBLE systems can help you to greater speed, economy and positive control. And our skilled installation staff will install a Visible System and instruct store personnel in its efficient operation without interference with regular office routines. Remington Rand supplies *all* equipment necessary for Cycle-Matic Billing, including world-famous Film-a-record for microfilming bills and posting media when non-descriptive billing is used.

• For complete details of Visible Systems, write to Remington Rand, Inc., Systems Division, 315 Fourth Avenue, New York 10.

Remington Rand

THE FIRST NAME IN BUSINESS SYSTEMS

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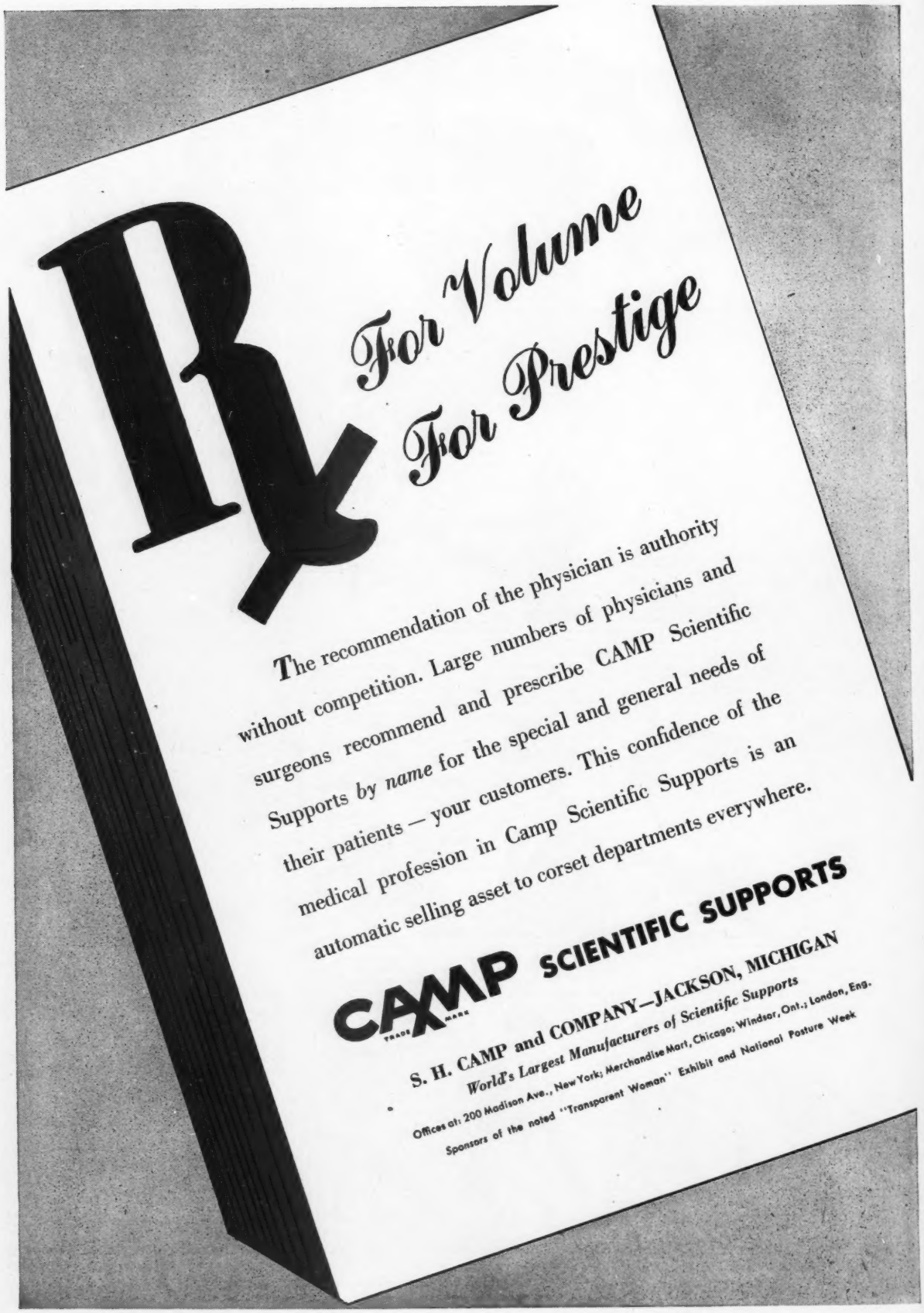
THE CANNON GIRL
LEARNS ABOUT CUSTOMERS!
PSYCHOLOGY
YOU'RE READY TO GO BEHIND THE COUNTER, CATHIE. SEE HOW YOU MAKE OUT WITH OUR NEW SHIPMENT OF CANNON SHEETS.
OH, MISS ELLIS, MY KNEES ARE SHAKING! I'LL TRY TO REMEMBER ALL THE THINGS YOU TOLD ME!
GOOD MORNING! THESE ARE OUR LOVELY CANNON PERCALE SHEETS. THEY HAVE A 180 THREAD COUNT AND---
JUST AS LONG AS THEY'RE SHEETS, I DON'T CARE - I'M DESPERATE! GIVE ME SIX!
Sorry— only 6 to a customer
SEEING YOUR HUSBAND IS SO TALL, MADAM, I SUGGEST YOU BUY YOUR SHEETS IN THE 108" LENGTH!
TEE-HEE! WE'RE NOT MARRIED - I MEAN YET!
WHAT'S THE THREAD COUNT? THE TENSILE STRENGTH? THE TORN LENGTH BEFORE HEMMING?
MAY I SHOW YOU? IT'S ALL HERE ON THE LABEL.
OOPS— THESE ARE PERCALE. I'M NOT IN THE MILLIONAIRE CLASS YET!
YOU DON'T HAVE TO BE, MA'AM! THESE SMOOTH CANNON PERCALE SHEETS COST ONLY A TINY BIT MORE THAN BEST-GRADE MUSLINS!
YOUNG WOMAN, I'VE SLEPT ON MUSLIN SHEETS FOR 60 YEARS. THEY WEAR LIKE IRON. WHY SHOULD I CHANGE NOW?
PERCALE SHEETS SLEEP LIKE SATIN, MA'AM. FEEL HOW SOFT AND SMOOTH THESE CANNON PERCALES ARE. AND THEY'RE GRAND FOR WEAR, TOO!
AS THE WORD GETS AROUND...
DID SOMEONE SAY SHEETS?
HEY, MISS!
OUCH!
CERTAINLY YOU MAY LOOK, MADAM, BUT WE HAVEN'T A SHEET LEFT. OUR STORE POLICY IS FIRST COME, FIRST SERVED.
WHAT A DAY! IT'S ME FOR MY OWN CANNON PERCALE SHEETS!
YOU DID A GRAND JOB, CATHIE. I WAS WATCHING YOU. IT WON'T BE SO HECTIC WHEN SOME OF THIS PENT-UP CUSTOMER DEMAND IS SATISFIED!
TO BE CONTINUED
CANNON PERCALE SHEETS
TRADE MARK
CANNON

COPR. 1947, CANNON MILLS, INC.

Cannon Towels · Stockings · Blankets ★ **Cannon Mills, Inc., New York 13, N. Y.**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For Volume
For Prestige
The recommendation of the physician is authority without competition. Large numbers of physicians and surgeons recommend and prescribe CAMP Scientific Supports *by name* for the special and general needs of their patients — your customers. This confidence of the medical profession in Camp Scientific Supports is an automatic selling asset to corset departments everywhere.
CAMP SCIENTIFIC SUPPORTS
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S. H. CAMP and COMPANY—JACKSON, MICHIGAN
World's Largest Manufacturers of Scientific Supports
Offices at: 200 Madison Ave., New York; Merchandise Mart, Chicago; Windsor, Ont.; London, Eng.
Sponsors of the noted "Transparent Woman" Exhibit and National Posture Week

lasting beauty
...is innate, not purely surface. DuraBeau Finish becomes an inherent part of the fibre.
DuraBeau Finish gives hosiery an exquisite, gossamer sheerness... and is a "film of protection" against snags and spots. It is a Finish that is deep seated... will wear and wear and wear. It is that glorious, smooth Finish that women love... that makes them feel grateful to you, who have made them feel well "leg-groomed."
DuraBeau
Reg. U. S. A. and Canada
SCHOLLER BROS., INC.
Mfrs. of Textile Soaps, Softeners, Oils, Finishes • Collins & Westmoreland Sts., Phila. 34, Pa. • St. Catharines, Ont., Can.

WHICH ONE STOLE THE $2700?

Miss A. had been a cashier in a New York department store for 20 years. She was quiet and well liked — not the kind of person you would expect to "borrow" from cash receipts and cover up by altering the records. But she did, and when no one found out right away, she "borrowed" some more. Three years later, when she was caught by the public accountants, she "owed" $2700.

This is not an exceptional story. Half a *billion* dollars is lost to American business every year through the dishonesty of employees. Yet most of these losses *can* be prevented . . . and trusted employees protected from the temptation to steal.

For buyers of Fidelity and Crime coverages, Liberty Mutual has developed a special plan. An Accounting Survey will help you plug up loopholes and prevent losses without disrupting your present accounting procedures. A staff of experts, especially trained in this field, will *work to keep you safe* from losses and your employees safe from the temptation to steal. This plan has helped to reduce insurance costs for leading department stores from coast to coast.

A booklet, "Loopholes and Losses," has been prepared for responsible businessmen. However, it must be personally delivered to you, since we cannot afford to have it fall into improper hands. Just telephone or write for your copy today.

LIBERTY MUTUAL
INSURANCE COMPANY
HOME OFFICE: BOSTON

Smoothing the flow of merchandising

☆ *We work to keep you safe* ★

Chatham makes good blankets . . in beautiful packaging for volume sales

"Lido Pair",
Chatham's 100% virgin wool blankets
paired for adjustable warmth,
are individually packaged in
beautiful plastic-topped closet boxes
with flower motif.

CHATHAM *blankets*

57 Worth Street, New York 13, N. Y. Tel.: WAlker 5-0180 • 99 Chauncy Street, Boston 11, Mass. Tel.: Hancock 4828 • 300 West Adams Street, Chicago 6, Ill. Tel.: Randolph 4673
605 Market Street, San Francisco 5, Calif. Tel.: Exbrook 1075 • 1214 Texas Bank Building, Dallas, Texas. Tel.: Central 5081 • Elkin, North Carolina. Tel.: Elkin 400

STAHLY LIVE-BLADE RAZOR *Proves Big Seller*

FOR YEAR 'ROUND PROMOTION!

CHROMIUM-PLATED (illustrated) . . $19.95 TAX FREE
GOLD-PLATED AND BLACK. . . . . 22.50 PLUS TAX
GOLD-PLATED . . . . . 24.25 PLUS TAX
Each in a Handsome Box, with Warranty Card

● Alert, quality-minded stores are making profits NOW filling pent-up demand for the Stahly. Consistent national advertising in THE SATURDAY EVENING POST, ESQUIRE, HOLIDAY, NEW YORKER and many other magazines is creating *continuous* demand, *building to a Spring peak for Fathers' Day business.*

STAHLY, INC., DEPT. 303 SOUTH BEND, IND.

READ WHAT A FEW OF THE FINE STORES HAVE TO SAY:

MACY'S — New York
"It gives the fastest, cleanest, smoothest shave we've ever seen, as Macy's unbiased Bureau of Standards will tell you."

JORDAN MARSH — Boston
"Isn't this something! It gives the fastest, cleanest, smoothest shave we've ever seen."

HORNE'S — Pittsburgh
"The scientific short-cut to the world's most perfect shave."

THE DAYTON CO. — Minneapolis
"The amazing Stahly Razor."

GIMBELS — New York
"Gimbels is mother and father to a brood of razors... The Stahly LIVE-BLADE Razor is the apple of our parental eye."

EMPORIUM — San Francisco
"Nothing like it for shaving pleasure."

LORD & TAYLOR — New York
"A few turns of the handle and the blade becomes alive."

HIGBEE'S — Cleveland
"The Stubbornest beard yields happily to the Stahly Razor."

ALSO:
BURDINE'S . . . . . Miami
YOUNKER'S . . . Des Moines
BRANDEIS . . . . . Omaha
NEIMAN-MARCUS . . Dallas
RICH'S . . . . . Atlanta
FREDERICK & NELSON . Seattle
SHILLITO'S . . . . Cincinnati
WANAMAKER'S . Philadelphia
MAY CO. . . . . Denver
HUDSON'S . . . . . Detroit
WOODWARD & LOTHROP . . . . . Washington
AND SCORES OF OTHERS!

STAHLY *LIVE-ACTION* SELLS ITSELF!

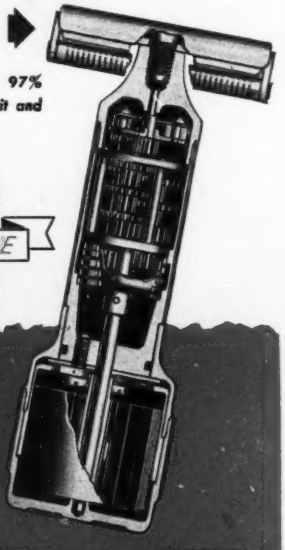
1 3,000 vibrant, whisker-cutting strokes per minute for "The World's Smoothest Shave."

2 Automatic, yet non-electric . . . shaves any time, anywhere . . . No wires — no batteries.

3 Shave wet, clean, with preferred soap or cream . . . *as satisfying in summer as in winter!*

4 Uses any standard double-edge blade — and blades last "3 — 4 times longer," users say.

5 Just ONE head — and 97% of the men who get it use it and *keep on using it!*



Why Wait?

Your customers will buy the Stahly *somewhere.* If yours is a "quality" store, arrange NOW to have it for them.

STAHLY, INC., Dept. 303, South Bend 4, Indiana

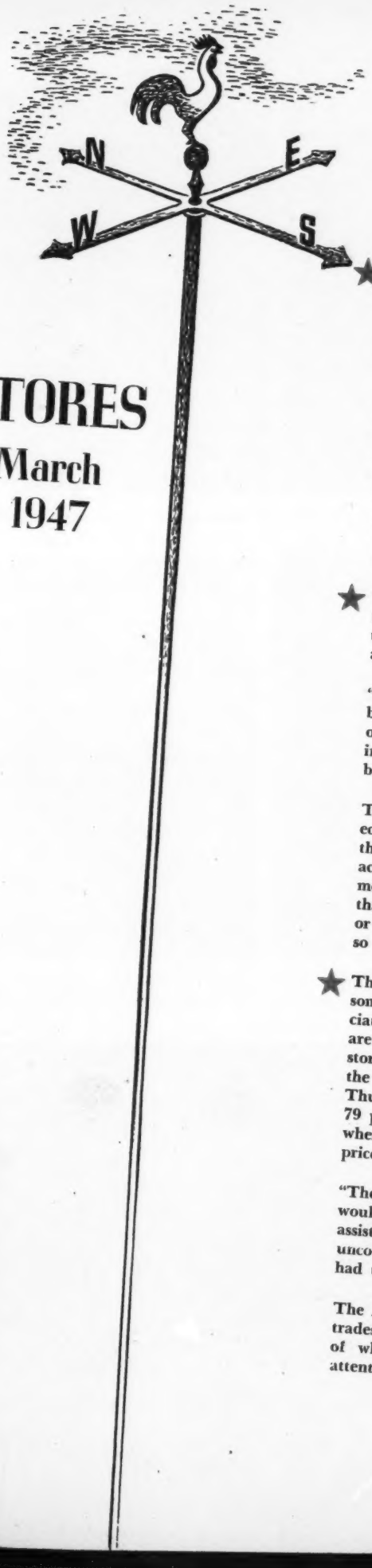
Gentlemen:
Please send information about semi-exclusive dealership plan. ALSO, if checked here ☐ ship one sample Stahly Razor for my personal use; bill at maximum quantity retail discount.

FIRM NAME_____

INDIVIDUAL_____

ADDRESS_____

CITY_____ STATE_____



STORES
March
1947

The MONTH in RETAILING

★ Retailing has serious reason to be concerned about its public relations as weeks and months go by with much talk and no action about prices. Nobody has summed up good public relations practice better than the advertising man who said: "You don't tell them how good you are—you SHOW 'em." The public is waiting to be shown. Does it have to wait itself right into a full-dress depression?

The chronic alcoholic can tell you with admirable logic and lucidity just how dangerous it is for him to go on drinking. But he doesn't stop. All business today soberly agrees that to deliberately lower the price level is the only way to reverse the perilous downward trend in unit transactions. But who is doing anything to put this intelligent talk into action? Major price reductions are still so rare that they make page 1 headlines in the newspapers. Lawrence B. Sizer, divisional vice president and sales promotion director of Marshall Field & Co., is one of retailing's experts in public relations. At the U. S. Chamber of Commerce marketing conference this month he said:

★ "We in distribution are far too prone to put the blame for high prices on the manufacturer, organized labor or any other group that contributes to the general situation. We simply can't escape our own responsibilities. Prices are too high, and we are as much to blame for it as anybody.

"The method of reducing prices can be intelligent and controlled—or it can be a mad scramble such as we all went through in the early '30s. If we ourselves, now, don't take some quick and effective steps to bring prices back into line, some things will happen to us that we won't like. And they won't be done by government—they'll be done by the consumer who says 'no.'"

The consumer is saying "no" already. The retailer cannot afford merely to echo this "no" and settle back to see what happens. He can accomplish something by applying the usual remedy for slow-moving stock, but he won't accomplish much unless the replacement stock that comes in is the right merchandise at the right prices. If distribution has become so mechanical that the retailer no longer has any say about what merchandise he will stock or what prices he will charge, then perhaps he'd better tell the customer so in plain language.

★ The conviction persists that it should be possible for retailers to exercise some influence on the kind of merchandise that's offered for sale. The Association publishes this month its complete report on what prices customers are shopping for in the soft goods lines. A copy is being sent to every NRDGA store. The report focuses attention on a fact worth stressing to manufacturers: the majority demand in each category falls into relatively few price lines. Thus, in the case of housedresses, although 20 price points were mentioned, 79 per cent of the demand was concentrated at five price points. In sheets, where 24 price points were mentioned, 69.2 per cent of the demand fell at six price points, ranging from $1.79 to $2.95.

"These prices are relatively so few in number that concentration on them would be obviously rewarding," comments Gordon K. Creighton, NRDGA's assistant general manager. Such concentration should, as a matter of fact, uncover a huge and profitable volume of consumer demand that has simply had to withdraw itself from the present market.

The Association is circulating the "What Price?" report to the manufacturing trades concerned as well as to its members. There it is—an accurate record of what customers are asking for across the retail counter. It demands attention and action—and not only from manufacturers.

(*Continued on page 64*)

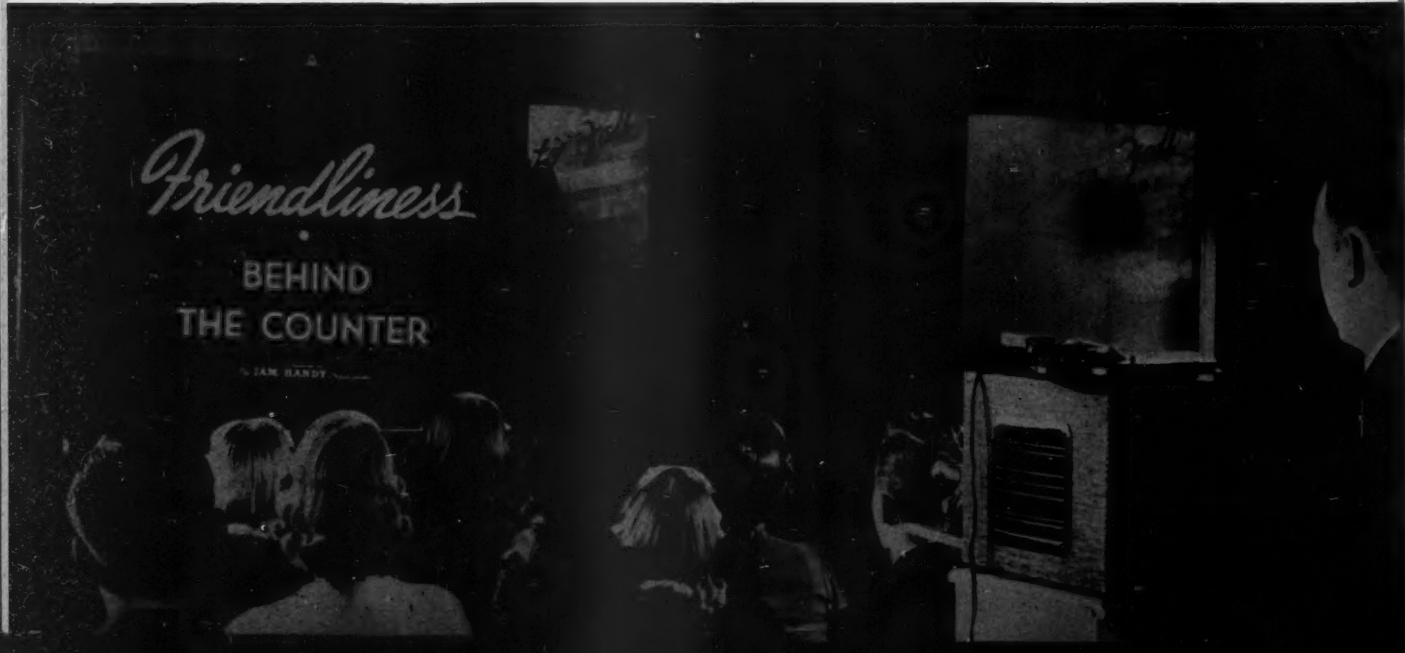
hotos by Jam Handy Organization

The motion picture is the ideal medium for a realistic demonstration of the practices and errors which cause the loss of sales and goodwill.

ıpervisory training by mot.on pictures ıays ırticular stress on the art of handling people.

Sales training films emphasize how important the knowledge of merchandise is to a sale.

Films demonstrate that the techniques of good salesmanship apply to all merchandise.



Training Films For Stores

By Nova Eisnor

IN recent years, during which so many retail training programs became virtual war casualties, retail employee standards reached a low ebb. Now a most urgent problem facing American merchants is to build up employee efficiency—and fast!

The war did a great deal to emphasize the effectiveness of visual training for this purpose. The armed Services demonstrated that in the case of technical subjects, visual training cuts the learning time by up to two-thirds. Moreover, tests have indicated that retention may be increased as much as 50 per cent, depending upon the nature of the material.

The most recent developments in visual training have centered upon the use of films. The Training Film Directory of January, 1947, published by the Personnel Group of the Association, lists and describes over 150 motion pictures and slide films available from various sources for retail training purposes. This number will be swelled by the addition of many other films now in process or being planned.

The use of films in training started around 1928 or 1929. In those early days, most of them were film strips. In 1933 there was developed the first inexpensive and satisfactory portable sound projector for 16 mm. film. In the same year, the producers began making film strips with recorded sound.

At about this time, the NRDGA, after setting up a committee to consult with manufacturers, helped to make one or two film strips on selling, in an effort to provide stores with material created from the retail point of view. From the beginning, manufacturers had recognized the power of the film, not only for imparting information and for other training, but also as a vehicle for incidental advertising. Very soon there arose an evil which still recurs—the over-use in a training film of advertising for a particular manufacturer or group of manufacturers. The early manufacturer-made films also tended to talk down to store personnel; most of them betrayed their extra-retail source by not talking in store language. Despite these objections, greater store use of the available films would have been made, had stores possessed the necessary projection equipment. Many manufacturers supplied projectors (and still do). Eventually it became possible to rent projectors and to engage operators locally in most cities.

During the past few years there has been a growing tendency for stores to have films made for their individual use. So far, the majority of these have been film strips, probably because of their lower cost. But currently, store interest in motion picture training films is gaining rapid momentum. In

THERE are three types of films, all of which are used in retail training:

1. THE MOTION PICTURE

The motion picture especially with sound accompaniment, enables the trainee to absorb experience by identifying himself with a particular situation which is dramatized. It is very effective in creating a desired mental attitude. It is ideal also for teaching operations in which motion is an integral factor.

Because motion pictures are expensive to make, they are not so well adapted as other methods to subjects which will quickly become outdated or are liable to detail changes. For example a motion film on fashion trends soon becomes useless.

The motion film is outstandingly versatile and adaptable. Its popularity as entertainment has especially conditioned present-generation Americans to learn by the movie. They grasp the portent quickly and surely and with more understanding than is the case with the written or spoken word. There is further psychological value: anything shown in film form is presumed to be interesting and entertaining, and therefore is acceptable.

2. THE FILM STRIP

The film strip consists of a roll of still pictures, arranged in a planned sequence, with or without a synchronized sound record. It is much less expensive to produce than a motion picture, but is equally effective for many purposes. It visualizes in a clear and orderly manner any series of related ideas which do not depend upon motion. It is excellent in presenting factual information, and in demonstrating the details of job methods and skills. However, the film strip is less flexible and versatile that the motion picture, and lacks dramatic "punch".

An important advantage is that the projector may be stopped at any time to permit the training director to comment at length on an individual frame. It also can be "cut back" to frames previously projected, if desired. The film strip can be kept up to date inexpensively by substituting new replacements for individual frames where necessary.

A new variation on the film strip is made by photographing still pictures with a motion picture camera, which can be manipulated in such a way as to attain variety and to create in some degree the smooth continuity of picture sequence which characterizes a motion picture. Devices like the fade-out, the close-up, and dissolves may be used. The cost of such a motion film strip is about double that of the simple film strip, but many people feel that the increased effectiveness merits the expense.

3. SLIDES

Slides are individual films mounted on cardboard or glass, which may be shown singly or in whatever order best suits the purpose of the moment. These are relatively inexpensive and easy to make. They are especially suitable where prolonged study or discussion of a particular illustration may be desirable. Slides are used mainly to illustrate lectures, the lecturer signaling by bell when it is time for the operator to change slides. But the sound of the signal is distracting, and the activity of the projectionist tends to attract the attention of the audience away from the lecturer and screen.

some cases, stores individually have undertaken the considerable expense of such films; in other instances, groups of stores have shared the expense in order to have films produced for their joint use through their buying offices.

Jobs Films Can Do

Employee indoctrination is one of the training jobs most successfully handled by films. It is possible thus in the course of a few minutes to convey some idea of the size and complexity of the organization, and to show behind-the-scene operations which otherwise the employee might never see. Thus the trainee can be made to understand that smooth functioning of the organization depends upon teamwork and good performance by every individual in the team. In addition to giving information about the company, such a film usually aims to develop correct attitudes toward the store and the job.

There is a growing use of films in supervisory training. Employee relations, the art of handling people, job breakdown, and job method, including work simplification, are important phases of the supervisor's responsibility which should be covered in this type of film. Here also, in addition to factual information, it is important to inculcate desirable supervisory attitudes.

Additional applications of the motion picture film which suggest tempting possibilities, but which as yet have received little if any attention from retailers, lie in the direction of public relations. A film showing to the buying public of a community the inner workings and the many services of one of its important stores, probably would be received with great interest and would build good-will for the particular store and for the industry generally. Local theaters undoubtedly would welcome a film of this kind, provided it were technically up to standard and avoided the use of advertising in the body of the film.

Schools and colleges also may provide good avenues for the use of films as a public relations medium. Any film honestly planned to teach, and with no mention of the store except as sponsor, probably would find local universities receptive, and through it the store could reach out to future customers at their most impressionable time of life.

Similar films also would be used to sell retailing as a career and to attract prospective employees.

Merchandise Selling—A Weak Area

It is natural that most films on specific types of merchandise and how to sell them should have orginated with individual manufacturers. It is also natural that many of these films should have been insistently promotional for a particular manufacturer's merchandise. Of late, manufacturers have begun to soft-pedal the advertising somewhat, and in a few instances trade associations have put out films in which brand merchandise is not highlighted. A great many manufacturer films will be made during the coming months, but whether they will be ideally adapted to store training use is problematical.

Despite the fact that there are more training films on merchandise than there are of almost any other type, the retail training field feels its greatest lack of proper film material in this direction. There are certain classifications of merchandise for which a motion picture would be a superlative training device, but for which the right type has never been created.

For example, there is crying need for a scientific and authentic film on the fitting and selling of foundation garments. The same is true for shoes. Neither of these subjects can be dealt with adequately by a single manufacturer, however, for both industries are supercharged with the promotion of patented constructions and trick ideas identified with particular brands. It is questionable whether even trade associations would be able to fill such training needs as these, since they cannot well afford to act without regard to the preferences of their most influential member manufacturers.

It has been suggested by various retailers, and some manufacturers as well, that the best way to obtain merchandise films planned from the retailers' viewpoint, is for the retail industry to undertake to make them, with the collaboration of the manufacturing industries. Would the manufacturing industries then be willing to assume the major part of the cost? Fortunately every industry has its leaders—men who can see beyond the immediate and the personal. It is to be hoped that such men as these could be relied upon to convince their less far-sighted fellows that when an industry benefits, every member of it shares in the benefit, and that in any case, it is a basic fact in modern business that service is the surest sales foundation.

Film Production Costs

There continues to be considerable controversy as to the relative merits of the motion picture and the film strip in training. Film strips have their definite place. But the relatively high cost of making a motion picture unquestionably has influenced some stores to make film strips when motion pictures really would have been far more effective from the training standpoint. Cost must be considered, but it should not dominate the decision.

Training departments generally have been the stepchildren of retail organization. Top managements which OK the expenditure of a thousand dollars each week for the flourish of a

(*Continued on page* 80)

The Personnel Group of NRDGA has long been interested in promoting visual aids as an effective supplement to store training programs. For the past 10 years it has maintained, with frequent amendments and revisions, a training film directory listing motion pictures and film strips covering a wide variety of selling and servicing activities and merchandising information which are applicable to store training. It has shown many new films as a feature of its convention programs during the past several years. It offers information, advice and guidance to stores interested in such visual aids on films made by stores as well as private producers, and on equipment found suitable for store use.

—GEORGE PLANT,
Manager, Personnel Group.

CREATIVE BUYING

GORDON K. CREIGHTON

By Gordon K. Creighton,
Assistant General Manager, NRDGA

A GOOD STORE is a perpetual fair. Women know that stores were made to be explored. Exciting adventures have taught them that the stores of this country are its fashion frontiers in apparel, its comfort and atmospheric frontiers in home-making, its convenience frontiers in almost all products which are to be bought in units.

"Look what I discovered today!" is the triumphant cry of the housewife at eve. And discover it she did. But the merchant, of necessity, had to discover first that she would *want* to discover it. That discovery of his was creative buying, for creative buying anticipates the desires of demand by more than the margin of reasonable expectation.

It is one of the principal functions of the merchant—probably his chief function as purchasing agent of the consumer—to stock and offer for sale those things which he knows his customers want and which they already know they want. But astonishment is also part of his stock in trade. He also has to carry the things that his customer wants but will not *know* that she wants until she sees them.

Leadership in merchandising is that quality which leads the merchant to apprehend earlier than the world in general the fact that a considerable number of people—and sometimes a large number of people—will respond to certain trends if they are exposed to them. It is his business to see that they are exposed to them.

Creative buying does not rest content, however, with mere selection from among the products of industry. Where and when it can intelligently do so, it penetrates the production line and seeks to influence the form of the product. In the coming consumer economy, which we of the National Retail Dry Goods Association have been forecasting for many months past, the techniques which tap the customer knowledge of distributors in the premanufacturing stage of production will be revived and greatly expanded.

Manufacturers should make it a principal consideration in their product design and planning departments to learn all that the retailer knows about what the "folks out there" are calling for. And, on their side, retailers should make it a part of their buying practice to try to get their suppliers to make what they know to be saleable items, items which the market is not yet producing.

The customer is the boss, and the boss is back. Discriminating selection is beginning to dominate the markets as it used to do. Choice reigns again and a free market means that the dark days of "take it or leave it" are over. When the customers may accept or reject the offerings which are placed before them, the positive or negative effect of their mass decisions will again become the determining factor in sales.

If consumers were articulate, their will could be expressed in a very short telegram addressed to Messrs. Merchant & Manufacturer, Inc., reading: "Please learn what we want and get together."

Manufacturers are thinking about this just as seriously as are retailers. I quote Herman C. Price, vice president of the Kalamazoo Stove & Furnace Co.:

"Creative specification buying is a type of merchandising which calls for the strong influence of the merchant on the production line. It means that the merchant, the buyer, the department store boss, actually dominate the manufacturing branch, supervising production design, engineering, cost and factory layout. It means that the merchant is in on the scheduling of production, intergrating the planning of sales with factory capacity. It literally means that the merchant who has heretofore gotten ink all over his hands writing orders must now get some grease on his hands checking assembly lines."

The best buying techniques have always taken full advantage of the opportunity to inspire, adapt, redesign and recreate, For the buyer's range of choice is not confined, like the customer's, to simple acceptance or rejection. The buyer has three alternatives in respect to the products offered to him. He may accept, reject, or influence a change. Creative buying does not take those products at their face value when they are *first* submitted for approval.

Creative buying says "No" much more often than it says "Yes." It knows that its ultimate agreement or disagreement is not with the manufacturer at all but with the customer. So, "yessing" the manufacturer may easily become just a short cut to a loss. I can recall innumerable instances in the dear, dead days before the war, of best-selling coats, dresses, handbags or what have you which were the result of the non-acceptance by the buyer of certain numbers on the line. In place of them, the buyer had suggested a recombination of features from different styles to make an entirely new style. In one case it might be the body of one coat, combined with the sleeve of another and the collar of a third to make up a coat better than any of the originals. Or, it could be the style of one hat which the buyer saw as more acceptable to the public in the material of some other hat neither of which she would buy "as is."

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MEASURING Display Efficiency

By Howard M. Cowee
School of Retailing, New York University

About 18 months ago, Arthur M. See, publicity director of Saks-34th Street, New York, pointed out the importance of display in the field of sales promotion. Even the small store with no money to spend on newspapers, radio or direct mail uses display continuously for point-of-sale selling. However, for some unknown reason, Mr. See said, "Display has stayed the Cinderella of advertising, the pretty sister who is potentially a princess but who stays home scrubbing the pots while more vocal and dynamic sisters—newspaper and radio advertising—take the limelight."

Mr. See urged that a grant be given to a university to study and evaluate display. The grant was made to New York University by the NRDGA. Dean Edwards of the University's School of Retailing appointed Howard M. Cowee of the faculty to conduct the study. In addition to Mr. See, the chairman, and Mr. Cowee, the NRDGA Display Committee members are:

Carl V. Haecker, Display Director, W. T. Grant Co., New York
John Pearl, Publicity Director, Hearns Dept. Store, New York
Sidney Ring, Display Manager, Saks-Fifth Avenue, New York
Samuel Blum, Display Manager, Bloomingdale's, New York
Albert Bliss, Bliss Displays and a member of the staff at N. Y. U.
Syl C. Rieser, Display Director, Stix, Baer & Fuller, St. Louis
Adrian Delsman, Display Director, Frederick & Nelson, Seattle
Aubrey Maley, Display Director, The Broadway Dept. Store, Los Angeles
John Moss, Display Director, Marshall Field & Co., Chicago
Howard P. Abrahams, Manager, Sales Promotion Division, N. R. D. G. A.

The first approach was to study traffic behavior and the pulling power of certain displays against others These tests were conducted through the co-operation of Saks-Fifth Avenue, Bloomingdale's, and W. T. Grant in Jamaica. Tht test results are reported in Mr. Cowee's article. More details of procedure will be available from the Sales Promotion Division. Additional studies of display—both interior and window—are now being planned.

—HOWARD P. ABRAHAMS, Manager Sales Promotion Division

METHODS and means are available to increase the effectiveness of interior display as a vital selling force. This has been demonstrated in the NRDGA-New York University display study. You can measure the efficiency of your interior display. You can apply exact rules for its improvement. You can measure the improvement. These are facts.

The first job in any research is to demonstrate a need for information and to determine an area in which the information developed may be used effectively. Because display is one of the oldest of all selling techniques, it seems logical that more should be known about it than, for example, is known about advertising, which is a relatively recent selling force. However, such is not the case. Display as a selling force has no wealth of informative technical literature. Colleges and universities, almost without exception, offer courses in the principles and techniques of advertising, but very few offer similar courses in the field of display. Display, in effect, is treated as an important but secondary selling force. Yet display is the *only* indispensable sales promotion medium for any retail operation.

In the field of research, itself, display has been neglected. Studies have been made attempting to measure and to set an audience circulation value for the medium of display. Studies attempting to measure the success or failure of display techniques and to establish principles, however, are practically non-existent.

Our survey of display clearly indicated not only a need for research work, but virtually a virgin field in which to work. Therefore, any progress reported herein must be appraised as an infant effort in a field which merits and which can support much additional research work of the most intensive nature.

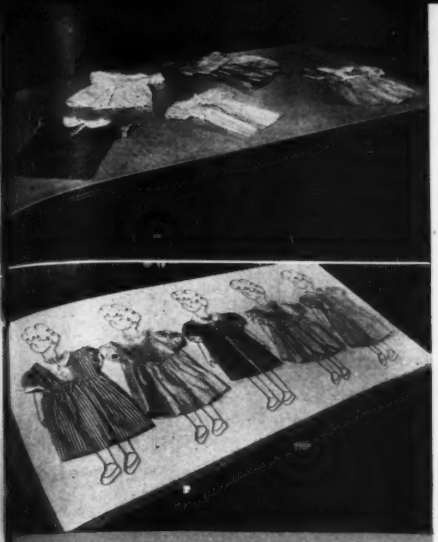
The Advisory Committee decided to limit the beginning efforts to a study of interior departmental display. Interior store traffic exists day in and day out. If we can discover how to sell more merchandise to existing store traffic, then we have indeed made progress. We are no longer placed in the position of constantly trying to build more store traffic to cover up our inability and lack of efficiency in making people want displayed merchandise more than they want the money which they have in their pockets.

It was assumed that it is: (1) the job of advertising to get traffic to the store, (2) the job of display to get people to look and to stop at interior displays, (3) the joint function of personal selling and merchandise itself actually to sell store traffic. Therefore, a study was made of the behavior of store traffic in looking and stopping at interior displays.

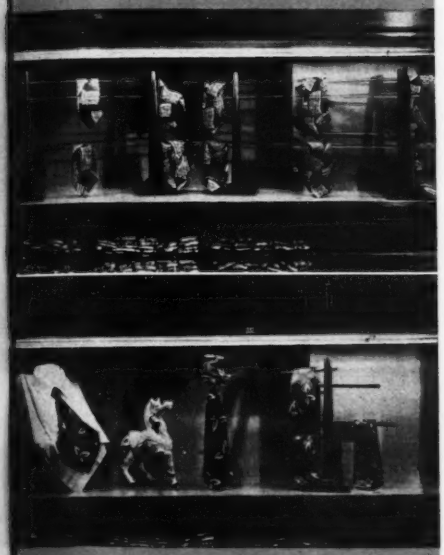
Scope of the Survey

To keep the study practical it was necessary to limit its scope. (1) Men's ties, (2) costume jewelry, (3) infants' dresses, were selected as subjects for study by means of a questionnaire and test displays.

Two methods were used to develop information. First, a questionnaire was sent to sales promotion and display managers of over 1000 member NRDGA stores. The questionnaires were designed to establish informa-



Group displays of infants' dresses, shown in use on wire figures vs. infants' dresses shown flat on the counter: 8% MORE PEOPLE LOOKED AT DRESSES IN USE.



Built-in ledge display of ties alone vs. dramatic display of ties ensembled with shirts, etc.: NO DIFFERENCE IN PER CENT OF PEOPLE WHO LOOKED OR STOPPED.

Counter displays of men's ties shown flat vs. display of men's ties on raised rack: 6% MORE PEOPLE LOOKED AT RAISED RACK DISPLAY; 2% MORE STOPPED.

tion on the following points:

1. Whether or not the display department is made responsible for interior departmental display.
2. Whether or not store management provides for the guidance of the display department a written or clearly understood policy.
3. What method display directors prefer for the handling of departmental displays by types of fixture (such as closed counter, open counter or table, and top of counter) for each of the three test classes of merchandise.
4. What factors of merchandise assortment influenced the display handling.
5. The influence of merchandise information upon displays and the handling of sign cards.

The questionnaire results were used as a guide for the second method, namely, measuring the behavior of store traffic when exposed to test displays.

Some questionnaire results merit specific comment here. Seventy-seven per cent of the stores answering the questionnaire said that departmental display was a responsibility of the display department.

It is significant, however, that in 50 per cent of the stores, management does not provide a written or clearly understood display policy. One of the charges frequently leveled against store management by display directors is that management does not fulfill its obligation in supplying the guidance of operating philosophy in clearly stated policy objectives. Here, perhaps, is the greatest source of much of the misunderstanding which we are led to believe exists between store management and display directors.

The questionnaire also reveals that store management imposes restrictions upon display in as many as 71 per cent of the stores participating. Rules are necessary. But management which operates on the basis of restrictions alone fails to supply objectives for its staff. Clearly defined policies, based on acceptable standards of performance, provide the positive incentive and guidance necessary to stimulate and evoke the best effort of any staff.

Obviously, standards are impossible where no basis for the measurement of successful or unsuccessful performance exists. Therefore, both management and display should find a field of common interest in studies, such as this one, designed to develop information on display techniques.

With the questionnaire available for background information on handling the test merchandise by types of fixture, the first phase of the project was organized. The plan was:

1. To test each merchandise classification—men's ties, costume jewelry, and infants' dresses—in three stores of different size, type and location.

   This attempt reached for the maximum. If test results proved to be relatively the same regardless of the size, type or location of the stores, it was felt that a step would have been taken toward establishing a definite display principle.

2. To measure traffic the plan called for two research assistants to be located in each test department. One research assistant counted and recorded the total traffic passing the test display area each hour. The second research assistant counted only those people who looked at the display, and secondly, those people who stopped at each display. The traffic counts were maintained by hours, five days a week, Monday through Friday, for a three week period.

   In this manner the total traffic for each departmental location was recorded and classified by content as:

   a. *Passers*—those who passed the display area without paying any attention to the merchandise offered.

   b. *Lookers*—those who passed the display area and who turned to look at the merchandise displayed without stopping, and

   c. *Stoppers*—those who actually came to a physical stop and examined the displayed merchandise.

   To insure the greatest possible accuracy, supervisors periodically checked the taking of the traffic count in each of the

three departments in each of the three stores. Admittedly, considerable margin of error may exist in the *looker* classification. However, we believe that the *passer* and *stopper* traffic figures represent a very high level of accuracy.

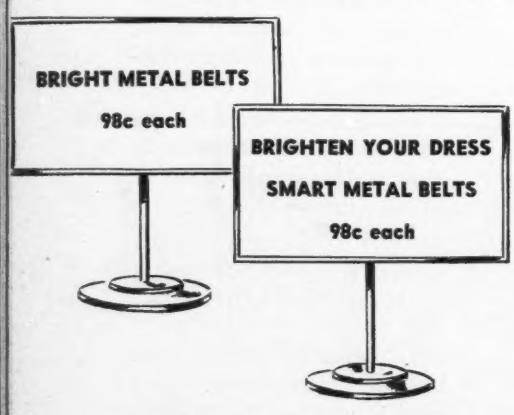
The traffic count was maintained for a three-week period. In the first week no display change was made in the existing test area locations. In the second week displays were alternated. In the third week displays were not changed, and traffic was measured under normal departmental operation.

Frankly, the three-week traffic count was not absolutely necessary. However, to train research assistants and to insure accuracy, it was highly desirable. Moreover, to the stores which participated in the test, the three-week traffic count provided a detailed analysis of traffic behavior from which very useful information may be gained.

The traffic recorders records prove that even generalizations based on comparatively "safe" guesses are inaccurate. For example, the tests were conducted during the period of November 4 through November 22—going into the holiday selling season, when everyone connected with the study felt that general traffic levels would be higher in each succeeding week as the test progressed. That was not the case. In one store only did the general level of traffic increase in each succeeding week. In another store traffic dropped in the second week and remained at practically the same level in the third week. In the third store the general traffic level dropped not only in the second week, but reached the lowest point in the third and final week of the test period. These are facts—they are not opinion, as were the original assumptions. The recorded behavior of 165,000 people proves that anyone can be very, very wrong in the business of guessing.

3. During the test week, when displays were alternated, a schedule was made up by hours and displays were rotated in such a manner that each display was given an equal exposure to departmental traffic. For example, if display "A" were exposed on Monday during the 11-12 shopping hour, display "B" was exposed during the 12-1 shopping hour. On Tuesday display "B" was exposed during the 11-12 shopping hour, and display "A" was exposed during the 12-1 shopping hour. All factors under the researchers' influence were controlled. Controlled changes in displays were made, and the effect of these changes was measured in terms of departmental traffic behavior. Weather conditions remained relatively constant, the same merchandise at the same price was offered for sale—except in the case of assortment versus single item display. There was no change in sales personnal. Therefore, the measurable difference in the number of *lookers* and *stoppers* was attributed to the display technique used.

Before discussing the results developed by the test displays, a word of caution. No claim is made that these results are definitive. They represent only indications, which in some cases merit further study. Only a start has been made. It is hoped that the results show sufficient strength to stimulate a desire on the part of member stores for further study and refinement.



Added words on sign card at right resulted in twenty-four percent increased belt sales.

Perhaps no single factor influences departmental display as fundamentally as does the housekeeping and presentation of an assortment of merchandise. The first test was designed to discover whether or not there is any measurable difference in the stopping power of an assortment of merchandise as opposed to a single item. This test involved the physical differences imposed by a closed counter as against an open, top of counter display. This test also involved the placement of merchandise with respect to the customers' eye level, because merchandise was displayed within the closed counter below the customers' eye level, and then on top of the counter nearer to the customers' normal eye level.

Test Results

In the first part of this test a costume jewelry assortment was shown within a closed counter, and alternated with a single item display of necklaces alone in the same closed counter area. There was no difference in the percentage of traffic *stopped* by each display.

However, when the same test was made with a costume jewelry assortment against necklaces alone on an open counter display, eight per cent more traffic was *stopped* by the assortment type display.

A tentative conclusion is that more attention should be given to open counter displays. Because the closed counter display is more remote from the customer and farther below eye level, this area is less effective as direct selling space. Closed counter areas, perhaps, should be considered as housekeeping units, and not as areas which reach out to stop customers with a merchandise appeal.

This section merits greater study. No test was made, for example, of the influence of lighting or of background colors. However, it is felt that a test of this nature is a step in the right direction toward determining the most effective selling areas within departmental locations.

The second test result expands upon the influence of merchandise displayed relative to the customers' eye level. There is considerable difference in the matter of people who look and stop at merchandise raised to eye

(*Continued on page* 78)

Well-Fed Workers Make Good Customers

By H. E. Babcock,
Chairman of Trustees, Cornell University

Here's something you may not have thought about—high standards of nutrition are job-creators. They increase the nation's income.

WE are all familiar with the typical American crossroads general store. It has a dry goods section where great bolts of colorful material are stacked on the shelves. In another section you can buy ready-mades, or maybe drugs. And you can stock up on groceries and meat while you are there.

The relationship between these various items necessary for human beings to live well and comfortably and the general welfare of the community is apparent the minute you enter the store. But it goes deeper than that.

Taking food as an example, the simplest way of presenting what I have in mind is to open the door of a well-stocked household refrigerator.

You know what you *like* to find in your own home refrigerator: milk, meat, eggs, butter, cheese—the animal product foods—and fruits and vegetables which you are trying to keep as fresh as possible until you are ready to eat them. If you went to a competent nutritionist, he would tell you unhestitatingly that the meals best for human being are based on these foods. He might even go further and point out that these are the foods people like best because they are palatable. Palatability is always a big factor in human nutrition.

Therefore one might suggest that what we see when we open the doors of our refrigerators is one measure of the success of what we so proudly call the American way of life.

But let's not stop with what we see or don't see on the shelves of America's household refrigerators. Let's look behind these shelves.

Back of the meat and the milk and the eggs in your refrigerator and mine is a great animal population, a cushion through which we pass grass, forage, and our surplus cereals and beans to create the animal product foods we so treasure on our tables. When the weather is good; when farmers are free to produce; when industry is busy and labor has jobs, our animal population tends to increase and we have more meat and milk and eggs in our diet.

Comes drought or any other national catastrophe, we begin to kill off our animals. We eat them, and then we eat the cereals and beans they would have eaten. The animal products disappear from our refrigerators. In free market, the adjustment usually is orderly and taken in stride. It hurts, but no one goes hungry. At the first opportunity we start fighting our way back towards a new high.

So when you look into your refrigerator after this, just look right through the food there and see the hens and cows and steers and hogs on Americas farms and ranches, and pray there are enough of them so that as you take their products from your refrigerator to your table, the meat, milk and eggs automatically will flow back into your refrigerator and refill its empty shelves.

New as it may be to you to think of hens and hogs in your refrigerator, let's look right through these animals and see some other items in this magic box.

The country's livestock population is supported by its grass and hay, and the cereals and beans which we human beings in America don't need to eat directly from the land. Due to our soil resources and the skill of our farmers, we raise more cereals and beans than we need for human consumption. So what we do when we have a free market is to bid against our animal population for what we want of these foods. After we have purchased what we need for human consumption, we let the animals have the rest.

The animals then have an auction among themselves. The hog bids against the cow and the cow against the hen. Each class of animals then really gets the proportion of the cereals and beans not needed for human consumption which you and I are willing to back it to buy so that its products will appear in our refrigerators.

By passing this feed through animals, the tonnage is reduced greatly. The animal food produced is more palatable, more perishable and therefore more digestible and nutritious. These are the values people everywhere in the world seek in their diet. We in America are quite fortunate in the amounts of these kinds of foods we are able to stock in our refrigerators.

(*Continued on page* 78)

Air-Age Merchandising

By Luise Haver

THIS country's retailers are suddenly feeling the full impact of the air age. It brings with it implications of radical changes in established merchandising practices. Long-cherished ideas of stock-sales ratios, profit margins, and market dates are due for an overhauling.

It is evident that our traditional seasonal merchandising practices and the new air age do not dovetail neatly. Retailers who have built their businesses on the foundations of good customer service, are facing up to a difficult choice. Either they will have to relinquish their cherished reputations, or they will have to accept the necessity for carrying off-season stocks of fashion goods the year round. Admittedly this will mean larger inventories, and a greater element of risk. Likewise it will mean the necessity for a higher level of merchandising and promotional skill, if net profits are not to suffer.

Heretofore, flight has been the prerogative of the few. But within a very short time it appears that it will be the habit of the great mass of middle-class, working Americans, on whom the average merchant has always depended for his volume and profit.

Airlines now are keenly competing for patronage, particularly that of vacationists. Drastically reduced rates are being advertised. Very significant to stores is the fact that since prewar the flying time between most points has been cut at least 50 per cent. No place in Latin Amercia, for example, is now more than 30 hours away. The influence of returned servicemen and women, to whom air travel is no novelty, is facilitating the general public's quick acceptance of this modern means of transportation.

To average Americans, whose two-weeks vacation plans previously have been limited to a nearby change of scene or at most an automobile tour through adjoining states, there suddenly opens up a vista of "foreign travel." The worker sweltering in the July heat of the south discovers that via air he will be able to spend his vacation in the heart of glacier country. The frozen-nosed secretary wading to the office through a Chicago blizzard can warm her spirits with the knowledge that the following week she will be putting on a tan in the kindly sun of Rio.

Here are a few March, 1947 air-facts:

A New Yorker can take a winter air trip to Honolulu for approximately $500 for the round trip. It takes 16 hours each way. (The same trip used to require three to four days to California by train, and four to five days to Honolulu by boat—one way.)

Or, 20 hours flight time will carry our New Yorker to Geneva, Switzerland. The Switzerland skiing season extends into late April, and on the higher slopes snow conditions are good in June.

The winter formal opera season in Buenos Aires falls in June; the audience wears satins, velvets, and furs. A woolen topper is a daytime necessity.

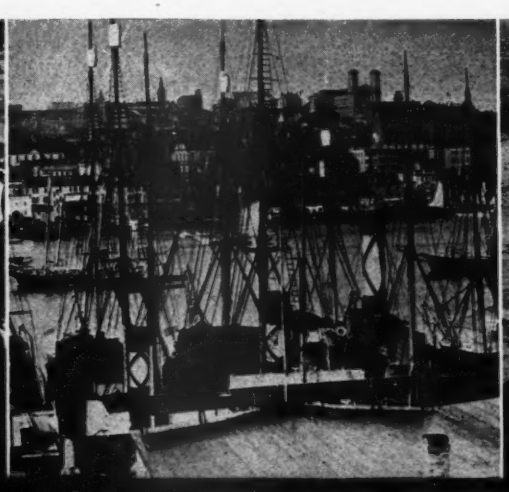
In July, when all the United States is setting heat records, people are skiing in Chile, and mushing with dog sleds in Alaska. Both places are quickly accessible to vacationists by air.

All sorts of special air excursions now are available, some of them including liberal stop-over privileges at intervening places of interest. To Newfoundland for the spring fishing season; to Seattle for the spring hunting and fishing; a Caribbean mid-winter air cruise—these are typical examples.

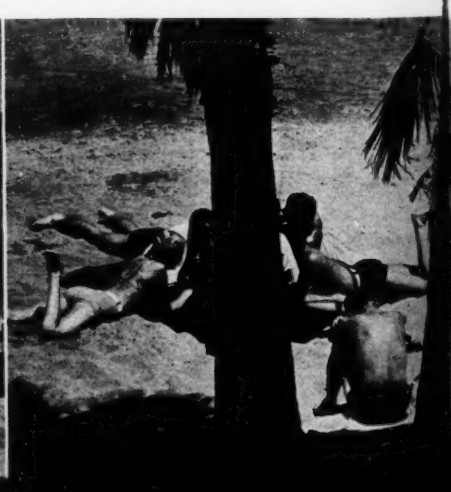
It's all very satisfying—except for

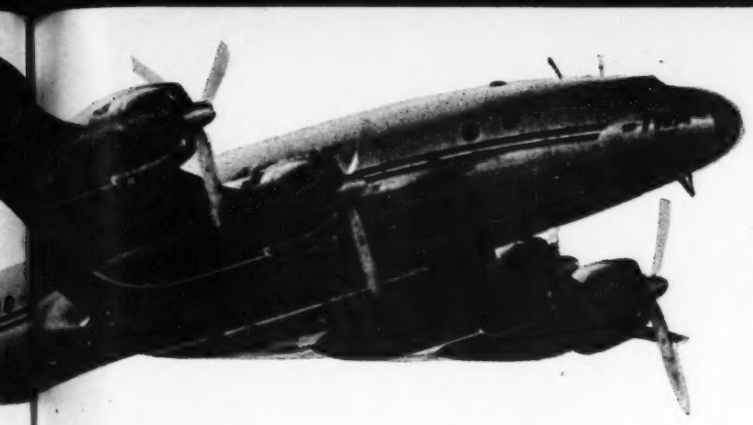
New England to Laguna Beach, California in a few hours by air. (United Air Airlines)

Newfoundland fishing boats await the arrival of excursion planes. (Pan American Airways)



America's middle class enjoys the tropic su on winter air vacations. (United Air Lines





one thing. Where, in July, is the Southern worker to pick up a good looking ski outfit and the new topcoat he must have? Where, in blizzard-ridden Chicago, is the secretary to discover the smartly styled bathing suit, the summer play clothes, the two or three cool cotton frocks that are a necessary adjunct to her trip?

People on a limited-time vacation do not want to spend their days shopping after they arrive at their destinations. They fully expect their home town stores to carry merchandise for their needs. Nor are they to be satisfied with the tag ends of past-season stock which normally would have been cleared out at a markdown price, nor even with a "basic year-round stock" of safely staple styles. To the prospective vacationist, the vacation is the big event of the year, a time to make a social splash, to be noticed for clothes that are impressively newsworthy. Not dying fashions, but those just being born, will be demanded by these new air-borne travelers. And their demands will touch every apparel department in a retail store, and eventually all price levels.

As always, there will be some to look at a new hazard and recognize it as a new opportunity. The first store in a community to make a really aggressive and well-timed bid for the air-vacation business, may expect to be repaid by getting the lion's share of it thenceforward. Such a store must be prepared to do a truly creative job, and to assume the responsibility not only of setting up a complete "Airways Shop" but also of prodding manufacturers into creating new, if limited, lines for the reverse seasons.

A certain amount of additional demand for such merchandise will come from a secondary customer source. Foreign visitors on air trips to the United States are eager to buy articles of the much coveted American clothing to take back with them, but of course such apparel as will be suitable for them to wear immediately on their return to their homes.

Unquestionably stores soon will notice an increased demand for clothes suited to the peculiar requirements of the air traveler. At a recent meeting of fashion and merchandising women in New York, a leading American designer of coats and suits, herself an inveterate air traveler, displayed several of the models she has created with special reference to air travel needs. These were distinguished by smart simplicity of line, great versatility, such practical features as utilitarian pockets and detachable cowl hoods, and the principle of additional layers of light outer clothing, rather than one bulky and heavy garment, for additional warmth.

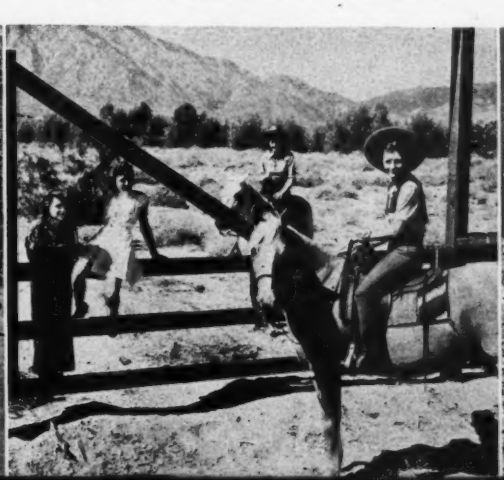
Fashion and merchandising heads in air-minded stores will find a number of tricky problems crying for solution. For example, really chic hats with a certain formality, but soft in construction to permit packing, will be required. In some climates, a broad-brimmed hat for shade is a necessity; yet, say store people, so far no completely satisfactory hat box for air travel has been made available.

What about luggage, Light weight is important. So is ruggedness, if the pieces are to stand up under the exceptional punishment they take in plane transportation. Will the air traveler prefer soft construction luggage, from which the reinforcing boxing has been omitted in order to cut down weight? Or must light metal or plastic types be evolved to fill the need? According to the representative of one group of stores, her customers have worked out their own surprising answer to this one. They buy the cheapest obtainable suitcases, let them take the beating of a single air trip, and then throw them away.

In the newly democratized air age, will men's Palm Beach suits and white oxfords become year-round items? Will summer fur departments have to keep a stock of fur coats and jackets? Will children's sections find it necessary to provide a representative assortment of wool mittens in July, and of cotton play suits in February?

Whatever responses the retail industry and individual American merchants may make to the novel situation which is looming up over the horizon, a less regional and a more international conception of merchandising is in order.

Dog-sledding as part of a June vacation in Whitehorse, Alaska. (Pan American Airways)



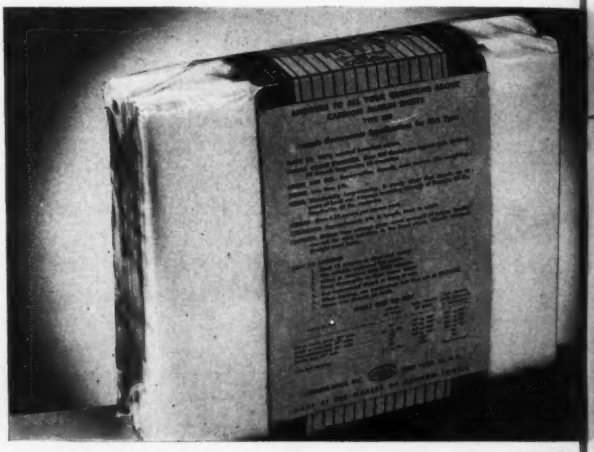
Palm Springs winter vacations now possible to the average American. (United Air Lines)

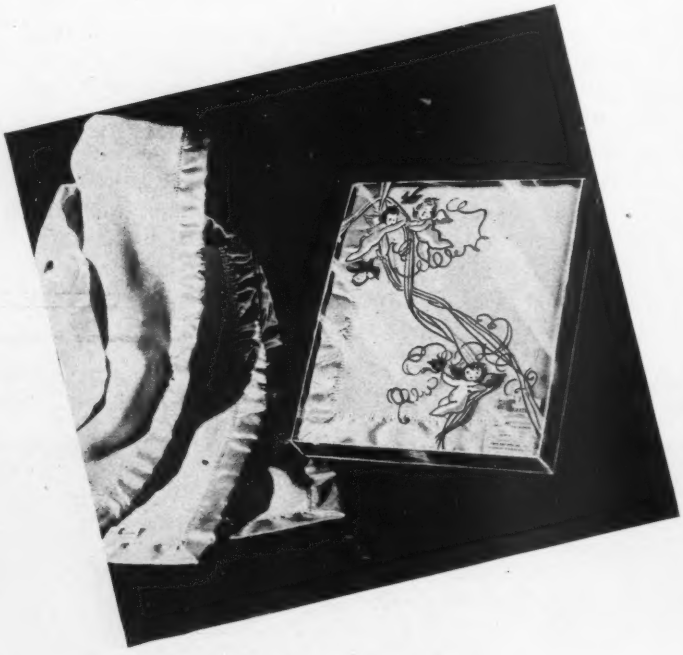
Skiing is a popular mid-July sport in the Chilean Andes. (Pan American Airways)

PROGRESS in PH

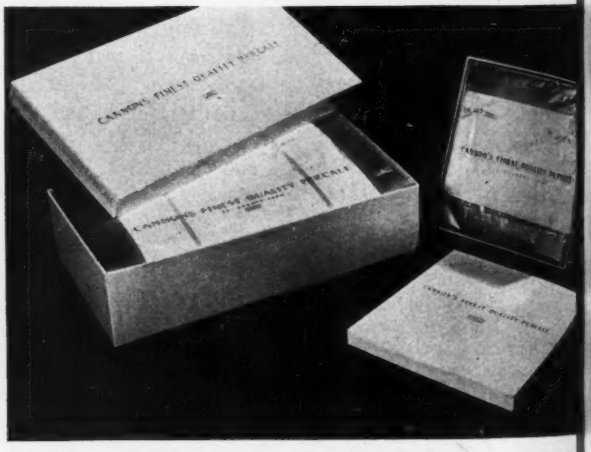
Prepacks of lamps and shades of W. F. B. Johnson Co. with labels for illustrating model and color identification.

Carton containing two Pepperell sheets packaged semi-automatica can be opened, reclosed and delivered with no wrapping by the st





The new plastic container for the Chatham baby blanket is ideal for display purposes providing a quality setting for the product.



Two sheets are packaged together in a cellophane-wrapped unit (u photo), and three units or six sheets come in each of Cannon's boxes. Pillow cases are cellophane-wrapped in half-dozens and bo

PRE-PACKING

The New Designs Reflect Intelligent Planning and Research by Manufacturers

By Rita Macintosh,
Merchandising Consultant,
Container Corporation of America

EFFECTIVE packaging is two parts planning to one part execution. We are already beginning to see on retail counters the first post-war results of such planning—new types of containers designed to dramatize the product, or protect it, or both. These packaging developments represent the awareness of leading manufacturers to the needs of the coming competitive market.

In the coming struggle for the consumer dollar, when retailers may find themselves competing with the drug store, gas station, supermarket and variety chain in selling merchandise that heretofore was considered in the department store's exclusive domain, the retailer who survives will do so because of efficient operation. In addition to the services his store can give, he must present his merchandise factory-fresh, so attractively as to create a desire to buy, and he must be able to stock it, sell it, and get it into the customer's hands at the lowest possible cost to himself.

Packaging alone, of course, cannot accomplish all of these objectives. There are many products which do not lend themselves to pre-packing. However, for a large percentage of staple items, in both hard and soft goods, simplification is not possible without an intelligently planned prepacking program. This means a consumer unit prepacked by the manufacturer, with no repacking necessary by the store.

Continuing research is being carried on by package suppliers, manufacturers. and, more importantly, by alert department stores themselves. Cooperation of the stores is of vital importance, for in the last analysis, it is in the retailer's stockroom and on his selling floor that the final performance of a package is measured.

If packaging people and manufacturers are to understand thoroughly the complex needs of stores, retailers must be thorough in their own analysis and articulate in stating their requirements. A good first step is the organization within the store of a packaging committee representing both the merchandising and operating divisions. And, if you are to get the most out of pre-packs, the packaging committee must also analyze store practices in handling packaged merchandise between the receiving platform and the sales counter.

Good housekeeping both in stock room and on selling floor are still "musts" if the customer is to receive

(*Continued at top of page* 24)

A Department Store Fact-finding Program to Push Progressive Packaging

By Ralph J. Brice,
Store Manager,
Gimbel Bros., Philadelphia

GIMBEL'S, Philadelphia, has a prepacking committee which consists of the buyers, the purchasing agent, the divisional merchandise managers and the store manager. Its initial function was to make a complete survey of merchandise carried departmentally in both the warehouse and the store to determine whether prepacked merchandise was packed properly at the original source. Its continuing function is to re-examine existing prepacking periodically, and continually to determine what additional merchandise could be prepacked by the manufacturer.

The purchasing agent's responsibility is to gauge as closely as possible the amount of expense involved in prepacking and to determine whether the merchandise division is paying an excessive amount for the labor and material. The buyer's responsibility is to deal with the manufacturer to improve packing and to arrange for additional prepacking.

The store's policy is to have the Merchandise Division assume the cost of prepacking. It is, therefore, to the buyers' interest to see to it that the most efficient job is done at the source.

The prepacking committee's work. more or less suspended during the war, is now being resumed. We consider it of first importance, because we consider prepacking both a sales booster and an operating advantage.

From the point of view of customer satisfaction, prepacking has these advantages:

It eliminates the possibility of vermin. It makes for quicker deliveries. Unpacking is easier because of the absence of excelsior, shredded paper, etc. It eliminates the possibility of receiving the wrong merchandise. It permits the customer to store the package in its original container until needed. It enables the customer to use attractive prepacked cartons for storage of miscellaneous articles. Beyond question it is the most satisfactory way in which to present goods to the customer over the counter or through the regular delivery channels.

Prepacking has many internal operating advantages which are equally important:

RECEIVING & MARKING ADVANTAGES:

- Merchandise thus packed can be marked faster with greater ease and frequently with a reduction of label expense.
- Such prepacking merchandise lends itself to accurate checking due to the fact that each carton is one unit and is so labeled.
- It prevents damage through careless handling in the receiving and marking rooms.

STOCK ROOM ADVANTAGES:

- Enables the retailer to save shelving space.
- Permits flexibility to either condense

(*Continued at bottom of page* 24)

(*Continued from top of page* 23)
the benefit of everyone's efforts. In the stockroom, for example, common sense should prevail in stocking boxes or cartons. Few are designed for stacking ceiling high.

And at the counter, any buyer who has not yet started developing techniques of selling staple items from samples, and giving the customer fresh merchandise, is missing a real opportunity to do it the easy way.

Plastics in Packaging

One of the loveliest packages in retail stores is the printed plastic container for the Chatham baby blanket. For protection, a chip board outer carton is used for shipment and delivery. The sales volume of this item is an indication of what packaging can do in adding to customer appeal.

The display box for the General Electric Automatic Blanket is of rigid transparent material and has a companion corrugated "carry-out" for merchandise actually sold. The transparent plastic box is used exclusively for display, and the "carry-out" takes the product home. Each of these packages has its own function, on the assumption that within a reasonable price range for this merchandise, no one container could meet all demands equally well. Such a program involving two packages, each with a different purpose, might well become an important trend; its practicality is evidenced not only by the decision of General Electric, but by retailers, too.

Many blanket departments are purchasing plastic display boxes for their sample blankets, and are using the manufacturer's prepack for forward stock and delivery. The resulting appearance of the merchandise on display is far more in keeping with the quality of a beautiful blanket. If this trend of using one special display box on the counter for heavy and bulky items and another for stocking, delivery, and "take-withs" were to receive wide acceptance, the construction of the prepacks themselves could be redesigned for strength and convenience rather than for counter use, and some of the traditional weaknesses of large containers could be overcome.

One word more about the handle on the "carry-out". It has been reported that a large percentage of these blankets are "take-withs" rather than "sends". The psychological suggestion of the convenient handle has certainly influenced many customers to offer to carry the blanket home rather than requesting delivery. There are hundreds of other items that could be packaged as "carry-outs"—it's a field which needs a great deal of research—and the advantages to operating divisions, in dollars and cents saved, are obvious.

To return to our discussion of transparent films: you can expect wider use of such display containers as the blanket box just mentioned, and other uses of transparent films combination with paperboard. For example, the Clearspun hosiery carton, the Shaleen stock box for hosiery, and the Wilson Skipperjama package, are all constructed of paperboard with transparent film laminated to the surface. This treatment results in a stronger carton or box, and in addition, the printed design is protected from scuffing and rubbing by the layer of film.

Windowed cartons are the most familiar use of films, and a great deal has been said for and against their practicality. The pre-war objections

(*Continued on page* 76)

(*Continued from bottom of page* 23)
or expand the stock.

Does not require the use of special stock fixtures.

Eliminates the necessity for frequent cleaning of reserve stock.

Eliminates the necessity of assembling sets such as in chinaware and glassware.

Speeds up the taking of inventories and contributes to more accuracy.

Greatly accelerates the use of stock control.

PACKING DEPARTMENT ADVANTAGES:

Reduces breakage to a minimum.

Reduces the amount of packing room space required.

Permits a definite saving on the variety of packing supplies needed.

Enables the packers to handle greater production, thereby eliminating overtime.

Reduces the necessity of checking sets of merchandise.

Very definitely prevents customer complaints through errors of assembling sets incorrectly.

Makes it possible for the packer to identify the merchandise quickly and accurately, and in a great many cases—

Simplifies their operation to the extent that they are required to merely paste an address label on the container.

Contributes substantially to a saving on packing materials because no outside wrapping of any kind is necessary.

ADVANTAGES TO THE MERCHANDISE DIVISION:

Permits vendors to make their deliveries faster.

Reduces markdowns because of lowered ratio of damage.

Reduces the number of returns to vendors.

Facilitates the inspection of merchandise that was previously packed in large crates or containers.

Makes possible more attractive display where such merchandise is sold from sample.

Reduces the amount of stockkeeping work on selling floors.

Permits salespeople to devote more time to serving customers thereby increasing sales and reducing selling cost.

Simplifies and speeds up the filling of orders.

Results in a speedier delivery to the ultimate consumer.

Permits the Merchandise Division to make an actual markup on a pre-packed box or carton which, of course, is passed on to the customer.

ADVANTAGES TO THE GENERAL STORE OPERATION:

Reduces packing costs.

Eliminates customer complaints.

Minimizes damage to merchandise.

Reduces the number of employes required to handle peak promotional sales.

PLASTICS
for Retailers

If you want to "sell" me *tell me it's made of Du Pont "Lucite"*

It's the ticket for sales..

BECAUSE:

1. "Lucite" is a familiar word to shoppers—for ten years this acrylic resin plastic has been building department store sales.

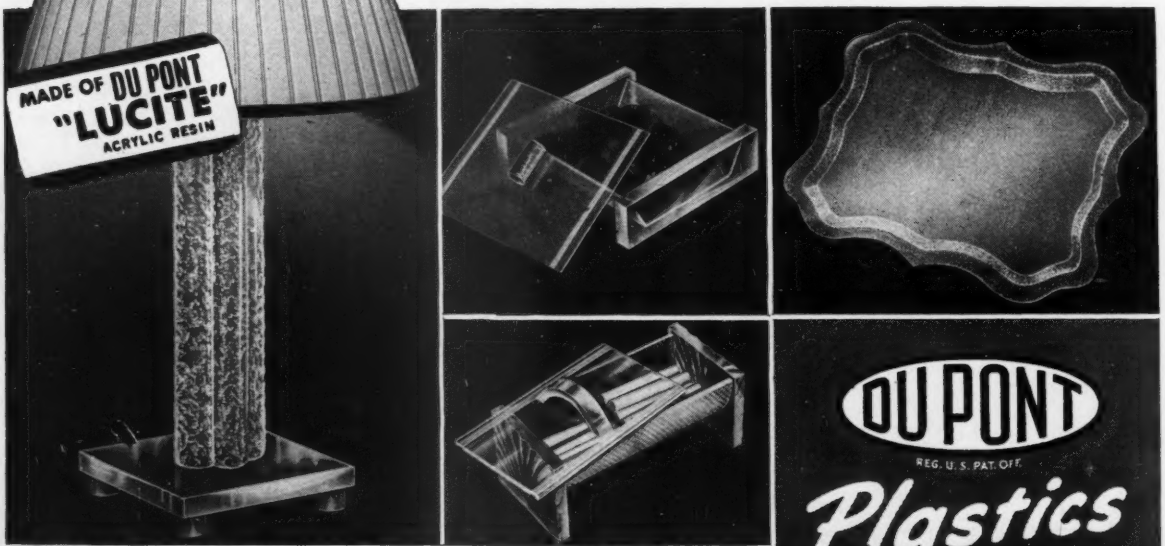
2. "Lucite" is backed by the reputation of Du Pont. Shoppers respect Du Pont's chemical leadership.

3. "Lucite" is featured in department store advertising. Buyers and sellers know the sales value of the word "Lucite."

4. "Lucite" is nationally advertised. There's powerful merchandising support from Du Pont's national magazine advertising, and the coast-to-coast radio program, "Cavalcade of America." (Monday evenings—NBC network.)

Be sure to ask for identifying tags and stickers when you order products made of Du Pont "Lucite" acrylic resin. They're supplied by Du Pont to leading manufacturers so that *you* can get full sales value out of "Lucite"—the word that people know!

Keep up-to-date on plastics developments by reading the Du Pont Plastics Bulletin. A note on your letterhead will put you on our mailing list. E. I. du Pont de Nemours & Co. (Inc.), Plastics Dept., Room 8147 Arlington, N. J.



THEY'RE NEW . . . THEY'RE "LUCITE"—Now . . . *patterned* "Lucite." Du Pont is now producing "Lucite" in frosted, pebbled and other smart designs. Right now 9 different surface finishes are available, and soon many additional patterns will be on the market. They bring new beauty . . . new sales value to "Lucite." (Tray by Neo Designs Co., New York City; other articles by Almac Plastics Inc., New York City).

DU PONT
REG. U. S. PAT. OFF.
Plastics
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

PLASTICS for RETAILERS

STORES' program to secure a better understanding among retailers of the many different types of plastics began in December, 1944. As its third major publication in this educational series, STORES now presents condensations of 13 of the 18 lectures delivered in the course entitled "Plastics for Retailers" which was conducted at New York University from September, 1946 to January, 1947. While space limitations have made it necessary to eliminate much of the technical data presented in the lectures, the editors believe that the material in the succeeding pages forms a good groundwork course for individual and group study. Its publication has been made possible by the generous cooperation of New York University and of the Society of the Plastics Industry, which sponsored the course.

Recognizing the need for knowledge of plastics by retailers, the School of Retailing approached the members of the Committee on Education of the Society of the Plastics Industry, Inc., in May, 1946, to seek their aid in formulating a course in Plastics for Retailers. The committee was enthusiastic about cooperating in the planning of this initial course.

During the ensuing months, an outline was developed covering those phases of plastics important to the retailer and to the consumer. The subject matter was divided into 14 lecture periods of approximately two hours each, and covered 18 topics. One expert in each field was selected to lecture and demonstrate each topic.

In September, 1946, the first group met. The original class, limited by classroom space to 45 members, included nine owners and managers of retail stores, nine buyers and other department heads, 10 assistant buyers and other junior executives, five representatives of industries related to retailing, four editors of magazines devoted to retailers and consumers and eight full-time students majoring in retailing.

The first course proved so successful that it is being repeated during the Spring term under the supervision of J. Earl Simonds, Plastics Consultant, who will conduct the sessions with the aid of other members of the plastics industry.

The School of Retailing is indeed appreciative of the whole-hearted manner in which the members of the Education Committee of the S.P.I. and the individual lecturers cooperated to introduce this first course on Plastics for Retailers.

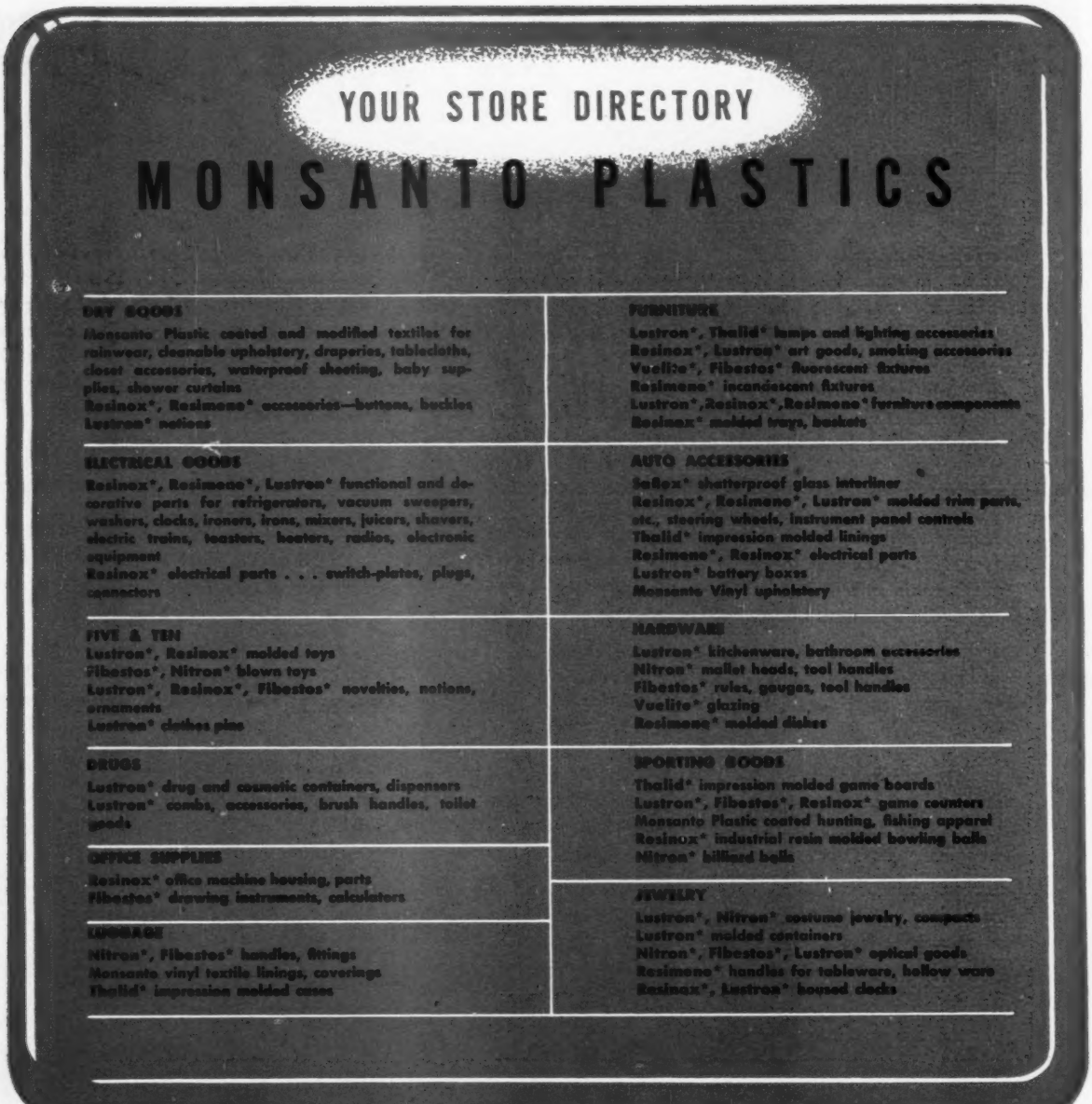
CHARLES M. EDWARDS, JR.
Dean, School of Retailing,
New York University

When the lecture course for retailers was being planned jointly by New York University's School of Retailing and the Committee on Plastics Education of The Society of the Plastics Industry, we committee members were hopeful that this experimental effort would stimulate interest in retailing centers throughout the nation.

It is rewarding now to note that the course at N.Y.U. has resulted in inquiries from plastics groups in Chicago and on the west coast as well as in several large eastern communities. We look forward to the development of similar courses in those areas, and we are gratified that the editors of STORES are now making these lectures available to the national retail field.

Tribute should be paid to the foresight of N.Y.U.'s Dean Edwards as well as to the energy and enthusiasm of Mrs. Karen Gillespie of the School of Retailing. We are also grateful to the authorities in the plastics field who gave so much of their time and effort to these lectures, for without them the success of the course would not have been possible.

HORTON SPITZER,
Chairman, Committee on Education,
Society of the Plastics Industry


YOUR STORE DIRECTORY
MONSANTO PLASTICS
DRY GOODS
Monsanto Plastic coated and modified textiles for rainwear, cleanable upholstery, draperies, tablecloths, closet accessories, waterproof sheeting, baby supplies, shower curtains
Resinox*, Resimene* accessories—buttons, buckles
Lustron* notions
ELECTRICAL GOODS
Resinox*, Resimene*, Lustron* functional and decorative parts for refrigerators, vacuum sweepers, washers, clocks, ironers, irons, mixers, juicers, shavers, electric trains, toasters, heaters, radios, electronic equipment
Resinox* electrical parts . . . switch-plates, plugs, connectors
FIVE & TEN
Lustron*, Resinox* molded toys
Fibestos*, Nitron* blown toys
Lustron*, Resinox*, Fibestos* novelties, notions, ornaments
Lustron* clothes pins
DRUGS
Lustron* drug and cosmetic containers, dispensers
Lustron* combs, accessories, brush handles, toilet goods
OFFICE SUPPLIES
Resinox* office machine housing, parts
Fibestos* drawing instruments, calculators
LUGGAGE
Nitron*, Fibestos* handles, fittings
Monsanto vinyl textile linings, coverings
Thalid* impression molded cases
FURNITURE
Lustron*, Thalid* lamps and lighting accessories
Resinox*, Lustron* art goods, smoking accessories
Vuelite*, Fibestos* fluorescent fixtures
Resimene* incandescent fixtures
Lustron*, Resinox*, Resimene* furniture components
Resinox* molded trays, baskets
AUTO ACCESSORIES
Safex* shatterproof glass interliner
Resinox*, Resimene*, Lustron* molded trim parts, etc., steering wheels, instrument panel controls
Thalid* impression molded linings
Resimene*, Resinox* electrical parts
Lustron* battery boxes
Monsanto Vinyl upholstery
HARDWARE
Lustron* kitchenware, bathroom accessories
Nitron* mallet heads, tool handles
Fibestos* rules, gauges, tool handles
Vuelite* glazing
Resimene* molded dishes
SPORTING GOODS
Thalid* impression molded game boards
Lustron*, Fibestos*, Resinox* game counters
Monsanto Plastic coated hunting, fishing apparel
Resinox* industrial resin molded bowling balls
Nitron* billiard balls
JEWELRY
Lustron*, Nitron* costume jewelry, compacts
Lustron* molded containers
Nitron*, Fibestos*, Lustron* optical goods
Resimene* handles for tableware, hollow ware
Resinox*, Lustron* housed clocks

Today on every floor, in every store, you're almost certain to find some kind of useful, sales-minded product, made of Monsanto plastics.

Our last count was 13,000 different items. And the number grows hourly as continued Monsanto research develops new plastics qualities . . . as Monsanto's postwar facilities come into full production. (Monsanto Lustron this year increases production 300% . . . 80 millio[n] [p]ounds in 1947.)

Why Monsanto Plastics?

Because Monsanto has one of the broadest and most versatile families in the entire industry . . . and also one of the oldest and best established technical staffs . . . the application of Monsanto plastics is remarkably sound. As a result, many resellers today find out if it's a Monsanto plastic before they buy . . . and then sell it with confidence and pride.

For information to help you buy and sell plastics, better, address: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Massachusetts.

*Trademark Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY . . . [W]HICH SERVES MANKIND

AN *Introduction* TO PLASTICS

By George K. Scribner,
President, Boonton Molding Co.

GEORGE K. SCRIBNER

PLASTICS today have become recognized as a unique creation of man, like nothing else on the face of this world. They are no longer substitutes for older and better-know materials. Remove plastics from the marts of trade today and the effects upon our generally accepted standards of living would be literally appalling.

Although we are far from being a new industry most of the things we are making today are new to the man on the street. We badly need friends in retailing who will have enough knowledge of our problems to excuse our inevitable errors—errors of enthusiasm as well as ignorance. We need friends who will guide us through the maze of new products and applications in which pioneering is bound to get us involved, who will have a sympathetic feeling when some ambitious, ignorant or avaricious person steps beyond the limits of safety or good judgment.

Raw Materials. The structure of the industry that produces plastics materials is a rather intricate one. It is a common conception that plastics are made of coal, oil, air, salt and water. Basically, that's true. It is just as true to say that you and I and the cat are 90 per cent water mixed with dashes of carbon, oxygen, and a number of other chemicals which can be named very specifically. The job of assembling them in the desired form is one that can pose many difficulties. The fact that the development of plastics has been delayed until organic chemistry reached the state of perfection that it has today should be a good indication of the difficulties involved.

These basic materials are processed by a miscellaneous chemical industry into a group of products called intermediates, and then the plastics industry takes over. When you turn one or more of these intermediates into a material which can be shaped or formed, you have joined the plastics fraternity.

Some of the more important intermediates are phenol, formaldehyde, urea, phthalic anhydride, acetic acid, and acetic anhydride, acetone, acetylene, and styrene. Some plastic companies make some of their own intermediates, in fact they may be in plastics for that reason. Some make none and merely convert what they buy.

Converters. In the early years the plastic raw materials companies specialized in converting only. By absorption, and for purposes of control and economy, the two levels have tended to merge. The result is that for the most part we see a group of the largest chemical manufacturers on the list of plastics suppliers.

Molders and Fabricators. The plastic raw materials are usually not in forms that can be recognized or used directly when they leave the factories of the plastics suppliers. They are in granules, liquids or fibers, and need to pass through the hands of another processor or converter before entering into the field of distribution.

There are many ways of changing this raw material into its finished shape: compression molding; injection molding; extruding; laminating, and fabricating. Each of these involves different problems and specialized techniques.

The recognized plastics trade, therefore, consists of raw material makers, molders, laminators, fabricators, extruders, and a group under the heading of sheet and film.

Plastics Trade Names. The raw material companies create the name materials—Lumarith, Saran, nylon, Plaskon—and many more. These may be only trade names for one of the specific kinds of plastics or they may cover a whole range. Trade names that attain such wide public acceptance that all products of a given material are referred to by that trade name are apt to lose their exclusiveness. Cellophane once was a private trade name which was lost when the public accepted it as a generic name. Bakelite is another trade name that was once on its way to being lost but has since been retrieved. Many years ago, it tended to become synonymous in the ears and speech of the man on the street as meaning any phenolic resin. One of the steps taken to preserve this as a private trademark property was to call all the products of the corporation by the covering name Bakelite, but distinguishing them by adding a suffix word, such as Bakelite Phenolic, Bakelite Urea, and so on.

The raw material makers do most of the advertising to make the public conscious of the possibilities of plastics for several reasons. They are usually larger in capital structure, they sell nationally, and they are merchandising products which competitively carry a very slim price and quality differential.

As in any other trade, the principal warning to be given the prospect is to be sure his supplier has sufficient knowledge of his job to guide him aright and to give him a satisfactory product. Plastics have been so glamorized as "the business of the future" that many volunteers with more capital than experience have crowded into the trade of late.

The whole subject of plastics is, of course, complicated. But are not metals just as complicated? You get iron in buildings and pills, and no one knows where mercury is likely to turn up. But you have lived with metals all your lives—their pattern is familiar, their names second nature.

We sincerely hope the element of time will bring plastics to the same point of familiarity, and that in the future you will be no more confused than the plastics trade itself in regard to what it is, and where it is going.

D. S. McKENZIE

Plastics and Your Customers

By D. S. McKenzie,
Plastics Division, General Electric Co.

THE plastics business has suffered and continues to suffer from a condition that appears to be peculiar to this one industry alone; an unknowing consumer is inclined to condemn all plastic materials because of a single misapplication or the improper use of a good application.

For example, a consumer purchases an attractive picture frame made out of Lucite and gets home and finds that the convenient location for this frame is on or near the radiator. By the end of the day the frame and his sweetheart are a distorted mess.

From our experience we find that the reaction of the consumer is simply and solely that plastics are lousy. Would he discard wood as a worthless construction material because one piece split? Would he condemn all the metals because a product of tin failed in a test that it was not supposed to undertake?

Let it be understood from the very outset that I by no means absolve the plastics industry from responsibility for this general misconception of their products. There are hundreds and hundreds of manufacturers in the plastics industry, from those who operate six or seven plants to those who have installed a single press in their basements. Some of these manufacturers make junk, and it is common knowledge that a good many people buy junk. But we have reached a point in this business where poor merchandise is being manufactured and sold at a very distinct detriment to the plastics industry and the general buying public.

I appeal to you for the good of your own business and for the plastics industry to scrutinize what you buy and determine for yourselves that plastics have been applied to each particular item correctly, and that they are performing the function they have been required to perform.

The Retailer's Job. How are you going to arrive at this end? It is not simple, but by the same token, it has been no easy matter for industrial users of plastics to make accurate decisions regarding these materials. They have learned, and I am happy to say that, generally speaking, plastics in industrial applications today are being applied efficiently and economically and functionally.

This is partly explained, of course, by the fact that an industrial user buys plastics directly from the plastics factory, and he invests a considerable amount of money in a steel mold before he receives even one production part. He cannot take chances. He must examine the materials minutely and must definitely ascertain before he places an order that the part will function when he incorporates it into his final equipment.

These engineers, as might be expected, utilize a formula. Actually, it is a long standing policy promulgated by reputable plastics manufacturers before they even agree to manufacture a plastic part. They make certain that:

First, the plastic will do a better job than existing materials at no extra cost.

Or, second, it will do an equally good job at a reduction in cost.

Or, third, it will produce better quality *and* lower cost.

Or, fourth, it will make possible the economical manufacture of an article where other materials fail to qualify. That is, it does something that you cannot do any other way.

You will agree, I am sure, that the policy is worthy, but to abide by it requires an intimate knowledge of the features and foibles of the materials.

You have a distinct right, and I might say a duty, to examine the quality of the plastics item you put on the consumer market. I might even add that you have a definite obligation to improve upon the quality of the goods that appear. You most certainly have the task of determining whether or not the plastic goods you buy do indicate a proper application of the material.

What to Expect. There is no plastic that is absolutely waterproof. There is no plastic that is absolutely fire-proof. There is no plastic that is absolutely damage-proof from mechanical damage. There is no such thing as an unbreakable plastic. So, in every case, the designing engineer compromises between those and many other characteristics to obtain an end result that, to the best of his ability, gives the result that the function of the product requires. I hope you will be able to decide how well he has worked.

When we make an ordinary dish out of plastic, we must, first of all, determine what this dish is likely to be subjected to. We disregard the possibility that the housewife may throw the dish. How strong it must be, what weight it should be, what foods and chemicals it will come in contact with, how rough a treatment it will receive in everyday use, does she or does she not have a dishwasher, these are decisions which influence the selection of the type of plastics for each new job.

I say that it is your task to sit in judgment on our decision. If we are wrong, the plastics industry can and will be thankful for your rejection, so that errors will not be repeated.

Informative Selling. I believe that the greatest single contribution towards the solution of our mutual problem would be a concerted effort on the part of retailers to insist on proper labeling of plastics. Here again the plastics industry falls down in that they fail to supply, at least to any

noticeable extent, information of an exact nature to wholesalers and jobbers, and the situation is unimproved by the time the products have reached the retailers' hands.

My observation is that the labeling of plastics in the consumer goods stores is completely inadequate in that the data provided includes only the desirable features of the items offered for sale, and I am not at all sure that they stop there. I suspect that these labels which claim plastic materials to be fire-proof, non-shatterable, unbreakable, boilable, able to be sterilized in live steam, are going a little bit beyond their capabilities. Some of it is not only inadequate but completely misleading and makes claims which plastics cannot possibly live up to. If you offer consumers a plastic article, you may rest assured that there are more than enough advantages in the material to offset whatever frailties it may have, if it is properly applied. If it does not, please recall our formula, that it will do the same job for less money, a better job for less money, or something you cannot do any other way.

The fact that a woolen sports shirt, for example, is labeled "Do not wash. Dry clean only," in no way reflects on the use of wool in shirts. It merely shows that labeling on this product is honest and informative.

We, in the plastics industry, implore you to follow this same pattern, whether you yourselves are creators of the labels, or whether they are handed on to you. See that they are right and honest.

A hideous example of labeling was cited to me the other day. It seems that a plastics soup strainer had been put on the market. The usual advantages of plastics were expounded. The soup strainer was beautiful. It was strong, it was flexible and it was inexpensive. It might be a very good soup strainer for Vichy, but I would not let it linger long in hot soup, unless the meat shortage had driven you to that kind of bouillon.

My suggestion is to mention only the pertinent points of the product in labeling, but present both sides of the picture as well. Give the consumer the facts that he needs.

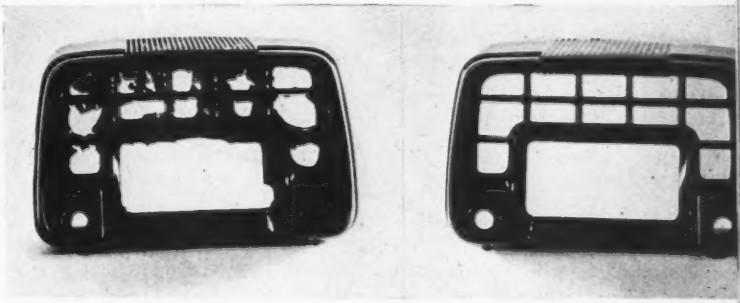
What Not to Expect. Can we make plastic automobiles and plastic house and plastic airplanes? Sure, we can. I heard so much about a plastic house that I got completely and thoroughly fed up with it and I hired an architect, and we took a set of specifications for a modernistic one-floor, no basement house, designed in 1944 to cost $7500. It had lots of window space and a flat roof, and it was the ideal American home for the returning service man.

We took the specifications of that house and went through them detail by detail, and there was nothing in it, not one thing that we could not produce from a commercially available plastic, except the electric wiring and the place where you built the fire to heat the house. I defy you to suggest something that we could not do. Even the insulation on the electric wiring was plastic, vinylite. It cost $100,000.

Certainly, we can make plastic automobiles, and plastic houses and plastic airplanes, but you would not want to ride in them or live in them or pay for them. Despite all the blue sky publicity there are definite limitations to what we can produce efficiently and economically for practical use.

Individual cocktail table with G-E Textolite laminated plastics base. Top is glass. Installation of lights inside laminated tube gives attractive lighting effects

The Victor adding machine housing is molded by G-E of black phenolic material, has good surface appearance, strength and dimensional stability



Two views of the compression molded radio cabinet by General Electric. Left as it appears when removed from the mold and right, after finishing process

TYPES OF PLASTICS

By Dr. Gordon M. Kline,
National Bureau of Standards

DR. GORDON M. KLINE

IN the great variety of plastic materials there are at least a hundred chemical types, many of which are not ordinarily encountered in retail markets. Although the names of these new materials may sound strange to you, they are no more complex, and certainly no more difficult to understand, than the various metals, such as copper, zinc, steel, manganese, etc.

Eventually, we think, retailers and the public will come to recognize the different types of plastics and their inherent properties. They do differ a great deal in properties, and the successful use of these materials depends very much on the proper choice of plastic.

The Thermosetting Resins

There are two basic types of synthetic plastic materials—the thermosetting resins and the thermoplastic resins. In the thermosetting group, there are (1) phenolics, (2) ureas and melamines, (3) polyesters, and (4) silicon resins.

The phenolic plastic was the first synthetic resin developed—the one that Dr. Baekeland made famous in 1909 under the name Bakelite. Its most common application is in the electrical field. The resin is dark and molded phenolic products generally appear in dark colors. The phenolic type is the least expensive of the thermosetting group and for that reason is used wherever color is not of prime importance.

When color is important it is necessary to go to another type of resin which is colorless in the pure form and can thus be molded and sold in bright colors. Urea and melamine answer this requirement.

The polyester resin is also colorless. It can be used to impregnate fabric or paper for the production of wall coverings, table coverings, and similar items, or it can be shaped into finished products. It is a very new type of plastic, developed within the past three or four years.

The fourth type of thermosetting resin is silicon. This is the common component of glass. The chemists have combined it with carbon and hydrogen to form the silicon resin. It is used chiefly as an insulating material. For example, motors made for sewing machines today can be only half the weight of prewar motors because when this resin is used as insulation less wiring and less insulation are needed.

The Thermoplastic Resins

The themoplastic materials are: nylon, vinyls, polystyrene, acrylics, and the cellulosics.

Nylon first appeared in the consumer market in 1939—and not in hosiery, but for the bristles of toothbrushes. In 1940 we began to get nylon hosiery, and since that time it has been used for many other purposes. It is now appearing in molded items.

The vinyls are the bread-and-butter plastics of the thermoplastic group. You find them in the wiring of your automobiles. They are beginning to appear in the form of upholstery materials, either as unsupported films or as a coating on fabrics.

Polystyrene, the third group, is one of which you will hear much more. The U. S. now has production capacity to produce 400 million pounds of styrene every year. (The entire plastics industry made less than 900 million pounds of plastics last year.) This production capacity has been built up because of the fact that styrene is an important constituent of the synthetic rubber that was used during the war. Styrene has become one of our cheapest raw materials, and if suitable applications for it can be found you will see a great deal of it on the market.

The acrylic plastics are more familiarly known by their trade names, Lucite and Plexiglas. The important application of this plastic during the war was as the windshield or enclosures on airplanes. It is transparent; being a thermoplastic it could readily be shaped to the streamline form required; and being a plastic it was half the weight of glass. Today the large capacity that was built up to make windshields for aircraft is available to make many beautiful, brilliant products.

The cellulosics can be divided into three types: nitrate, acetate and butyrate. It is unfortunate that cellulose nitrate (Celluloid) was the first plastic discovered, because it is also the most hazardous, and one which the industry has been, to a large extent, trying to get rid of ever since it was invented. It is easily ignited, and when it is ignited it burns very fast, and has been responsible for a great many fires. The only thing that has kept it on the market is its cheapness and certain qualities of toughness which have not quite been met in the other cellulose plastics. However, for most purposes cellulose nitrate has now been replaced by cellulose acetate. Compared with cellulose nitrate, cellulose acetate is relatively non-inflammable. That gives it the additional advantage, of course, that it can be molded at rather high temperatures.

Butyrate, the third cellulose plastic, was developed chiefly because cellulose acetate absorbs fairly large quantities of moisture and in doing so expands. Acetate also requires a large amount of plasticizers to convert it into a plastic. These evaporate on aging and hence the material is not as rimensionally stable as we would like it to be. The butyrate is better in this respect.

These types of cellulose plastics all increase in cost as they become more complex. The acetate is more expensive

than the nitrate, and the butyrate more expensive than the acetate. You have to consider whether the additional dimensional stability, for example, that you get with the butyrate is worth the difference in cents involved.

The Natural Plastics

In addition to the two groups of synthetic plastics (thermoplastic and thermosetting) there is a classification of natural plastics which should be mentioned. These are casein, shellac, and rosin. Casein, made from milk, has been used successfully in this country only for buttons. It accounts for less than one per cent of the total plastics produced in the U. S.

Shellac is probably the most successful ingredient for molding phonograph records, and of course it is used for floor coatings.

Rosin, a resin obtained from the pine trees, has little use in the plastics industry because it has a very low softening point and very poor resistance to moisture.

Methods of Production

Molding is the basic method for shaping plastics into finished products. There are two types of molding: the "squeeze" method, or compression molding, and the "squirt method, which is injection or extrusion molding.

In compression molding you load a powder into the mold, and apply heat and pressure to shape it into a finished part. The thermosetting materials lend themselves particularly to this type of molding because they become hard, or "set", when heat is applied, and hence the mold does not have to be cooled before the part is removed.

It would be uneconomical to mold a thermoplastic by compression methods, because the mold would have to be cooled each time before the part could be removed. Thermoplastics "set" on cooling. In the injection molding process the thermoplastic molding powder is heated and when it has become soft it is pushed from the heating chamber into a mold which is relatively cool.

In extrusion molding, the heated material, instead of being forced into mold, is extruded through an orifice and fed into a long water trough, where it cools until such time as it can be handled. Practically any simple shape can be extruded.

Another type of pressure shaping is called laminating. Paper or fabric is impregnated with the resin and stacked in a press. Heat and pressure are applied which squeeze the material to half or less of its former thickness, and at the same time cure the resin and form the product into a hard, rigid, stable sheet. In turn, the laminated material can be reheated to a very high temperature and then "postformed" into a finished shape.

The thermoplastic materials lend themselves to still another production method, called drawing. One such operation is to heat up a flat sheet and then by applying pressure draw it into relatively simple shapes such as the usual type of florist's box, which is made by this process, of cellulose acetate or other cellulose products.

Another shaping operation used for thermoplastics is blowing. To form a bottle a sheet of flat material is heated and held together at the sides, a stream of air is shot in through an opening, and the plastic expanded against the sides of the molds. The same thing can be done to make Christmas tree balls.

Casting is a process which can be used both with thermoplastics and thermosetting materials. The materials are formed without the use of pressure. An example would be the casting of a long tube of phenolic, later cut off in the desired thickness and made into belt buckles.

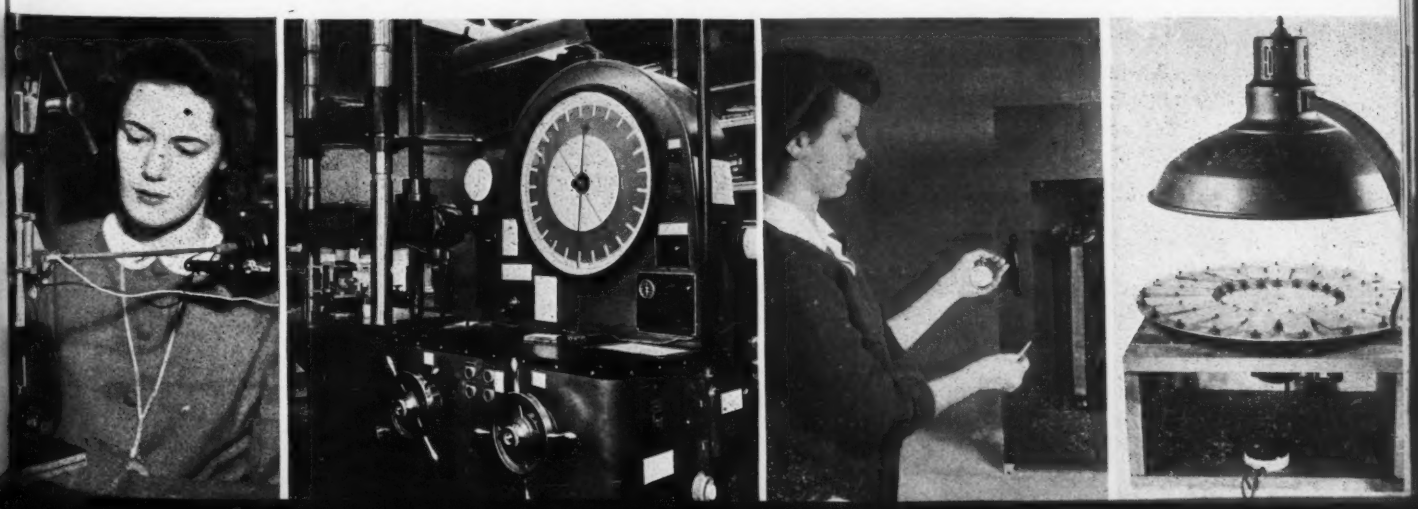
The last process of cutting off the cast phenolic tube and making it into buckles, is a machining process. Plastics materials lend themselves to the usual types of machining, such as are used with wood and metal.

Proper understanding among retailers and consumers of the different properties of different plastics will eventually be achieved by informative labeling. Accurate informative labeling is always based on tests—tests which determine whether a product meets the specifications required. I am going to tell you a little, therefore, about the methods and terminology used by the testing laboratory in evaluating materials, including plastics.

The Weight of Plastics

Specific gravity is simply a comparison of the weight of the object against the weight of a similar volume of water. The specific gravity of steel is ordinarily close to 8. The specific gravity of aluminum is about 2.8, and glass is in the neighborhood of 2.6. The range for the great variety of plastics is from 1 to 1.4. Thus an object made of steel would be eight times as heavy as an identical one of plastic; and in aluminum it would be two or three times as heavy.

Some of the methods employed at the National Bureau of Standards in testing physical and chemical properties of plastics. (1) Measuring tensile strength; (2) the universal testing meachine; (3) the flammability test for plastic film, and (4) the accelerated aging test.



Mechanical Properties

Tensile strength is the resistance a material offers to force exerted by pulling. It is important, for example, for the housewife to know whether the shower curtain she has hung up is going to tear loose if somebody happens to grab hold of it at the bottom.

Compression strength is the amount of resistance a material offers to the force exerted by pressure.

Another mechanical property is bending or flexural strength. This is actually a combination of tensile and compression strength.

Impact strength is resistance to breakage on striking another object. We know now that all plastics are not unbreakable—that they differ considerably in this respect.

It is important to remember that some plastics have very poor impact strength. For example, polystyrene is very poor in this respect. One of the characteristics by which polystyrene can be recognized is the glassy ring it makes on impact, as against the dull thud of other materials. It is as breakable as it sounds.

Thermosetting materials as pure resins would in general have poor impact strength. That is one reason why they are used with fillers. But the best way to get impact strength is to impregnate fabric with the resin and then shape it into a finished product. Then you get the inherent toughness of the fibrous material along with the binding and dimensionally stabilizing characteristics of the resin. Of course, in between the two extremes of polystyrene and impregnated fabric, there are all degrees of impact strength.

The measurement of *hardness*, another mechanical property, has been a controversial subject. Let's simply say that plastics in general scratch fairly readily.

However, some of them, in their laminated form, have sufficient resistance to scratching to make better table top materials than those we have ordinarily used for the purpose.

Abrasion resistance is closely connected with hardness, varies according to the type of plastic. The vinyl material, being somewhat rubber-like, tends to be much better in abrasion resistance than some of the harder materials.

Thermal Properties

The resistance the materials will have to the temperatures they will meet in use is an extremely important consideration, especially in the case of the thermoplastics. For example, a styrene part, if placed in boiling water, would shrivel up and lose its shape entirely.

There are some types of thermoplastics, however, that have softening points above the boiling point of water. Nylon is one, and it can be used for bristles because of this. Materials which have resistance above the boiling point of water can be sterilized.

Other materials in the thermoplastic group have been proposed for use as tiles for walls in kitchens and bathrooms. There again it would be all right up to temperatures of about 160° or 170° F., but if they should be close to a radiator or steam outlet they would be inclined to shrink and pull away from the wall.

The thermosetting materials, on the other hand, are more resistant to heat. The effect of high temperature on such products is not particularly one of softening but rather one of decomposition; and for thermosetting products in general it is necessary to keep the temperature below 300° F. to avoid having a chemical breakdown.

As to inflammability, there is again a wide variation. Cellulose nitrate, of course, burns very readily. But there are plastics available which are non-inflammable: they may burn and sputter a little bit as long as a flame is in contact with them, but once the flame is removed they will cease to burn. The vinyl plastic containing chlorine is a very slow burner. Between these two extremes are all degrees of flame resistance. Paper or fabric impregnated with a phenolic resin burns very, very slowly. For hazardous shipboard work in the Navy they require glass fabric impregnated with melamine, which falls into the self-extinguishing class.

Optical Properties

Light transmission and haze are the important optical properties. If you have a high order of light transmission the material becomes transparent—provided the light is passing through in a straight line and is not being deflected by impurities or scratches. If you have impurities or scratches then the light is diffused and you get what we call haze. These two optical properties are very important for any application involving a transparent product.

Electrical Properties

Among the important electrical properties are dielectric strength and arc resistance. *Dielectric strength* is simply insulating quality, and in general, for ordinary home insulations, plastics have sufficient dielectric strength. If a product has poor *arc resistance* the current tends to track and burn away the surface of the plastic. Some plastics, melamine, for example, are very good from this standpoint. We need to know more about the arc resistance property of plastics.

Durability

People want to know, naturally, how long these plastics materials are going to last. What will be the effect of humidity and temperature changes? To determine this there is a set of accelerated service tests, which subject the material to temperature and humidity changes equivalent to service conditions. The resinous materials in general are more resistant to changes in humidity than the materials containing cellulose. The vinyl materials and the polystyrene materials are not particularly affected by changes in humidity. However, they can be very materially affected by the higher temperatures.

Weathering resistance is tested by the accelerated weathering machine. Very few of the plastic materials have what could be called permanent resistance to outdoor weathering. In many cases, the effect is primarily one of surface deterioration, without an actual loss of mechanical strength. The phenolics are inclined to undergo surface discoloration, but the actual deterioration goes no deeper. The thermoplastic materials in general do not have such excellent weather resistance. One exception is the acrylic plastic.

(*Continued on page* 58)

THE *Cellulosics*

By Dr. Marie Bentivoglio.
Celanese Plastics Corp.

THE plastics industry began almost three quarters of a century ago with the invention and manufacture of *cellulose nitrate* plastics, which became widely known by the registered trade name "Celluloid".

For almost 40 years cellulose nitrate sheets, tubes, rods and films were the only plastics materials made commercially, but since 1909 new plastics have been added in ever-increasing numbers. Among these have been four cellulosics: *cellulose acetate, ethyl cellulose, cellulose acetate butyrate,* and *cellulose propionate.*

All the cellulosic plastics can be made into films, sheets, rods and tubes, and all except cellulose nitrate are made in the form of molding powders. They are also important ingredients in lacquers and paints and in coatings for impregnating and waterproofing fabrics. The heat sensitivity of cellulose nitrate precludes its use in injection molding and "dry" extrusion, but these are very popular converting techniques for all the other cellulosics.

PROPERTIES OF CELLULOSICS

The ideal plastic, like the ideal metal, has not yet been found. Each type of plastics material has limitations imposed by its properties and qualities. The most characteristic properties of the cellulose are:

Thermoplasticity. Cellulosics become soft and malleable when heated. Because of this property they can, under heat and pressure, be made to take any shape, and the shape is retained on cooling. They may be heated any number of times and pressed each time into any desired shape. In fabricating operations, cellulose scrap material can be reused, and waste is kept to a minimum.

The thermoplastic quality is retained, of course, in the finished article, and therefore parts made from cellulose plastics are affected by high temperature. The degree of heat at which a given cellulose will suffer distortion varies according to its type and formulation, but the maximum temperature ranges, roughly, from 180 to 250 degrees. Such temperatures remain merely a theoretical consideration for the great majority of applications; since they are intended for normal temperature conditions.

A fabricated part of a cellulosic plastic may also lose its shape if it is placed under a relatively heavy load. This phenomenon of deformation under load is also called "cold flow".

Formulation Possibilities. Formulas can be modified almost indefinitely to suit different product requirements. "Hard" formulas are prepared with only a small amount of plasticizer; "soft" formulas are made with relatively large proportions of plasticizer. The type of plasticizer selected also affects the formula.

The formula chosen varies according to the properties required in the finished part or object. Among the properties sought may be toughness (shock resistance); tensile strength (ability to withstand pulling strain); compressive strength (ability to bear weight); flexural strength (stiffness); resistance to distortion under heat or load; surface hardness and scratch-resistance. The formula selected gives the best *balance* of properties suited to a particular end use. Each property varies as we go from hard to soft formulation, and it is obvious that all properties cannot be obtained at their highest peak in a single formula. Highest surface hardness cannot be combined, for example, with highest shock resistance.

Toughness. The cellulosics are the toughest plastics. They can take a good deal of knocking around. The "soft" formulas are tougher than the "hard". Ethyl cellulose and cellulose nitrate compositions are tougher than the other three cellulosic types. The only flashlights tough enough to meet the government's specifications during the war were molded from ethyl cellulose. For normal civilian use, of course, flashlights molded from any of the cellulosic plastics are entirely satisfactory.

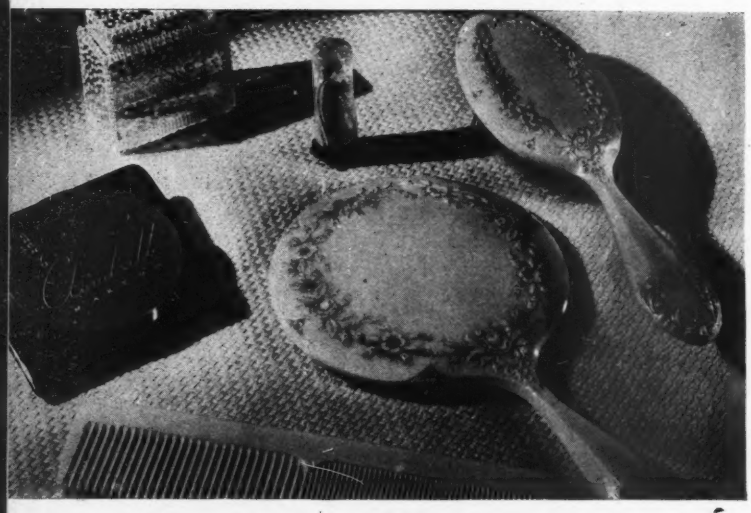
Colorablity. The cellulosics have unlimited colorability. They stand alone in the plastics field for range of color and color combinations both in random mottles and in geometric design. The variety of the spectrum can be faithfully reproduced, in delicate pastel, bright transparent, warm translucent, or dense opaque colors. Symmetric designs such as checks and stripes, and configurations such as lizard skin and imitations of mother of pearl, jade, tortoise shell, lapis lazuli and rare woods are readily reproduceable.

Machinability. Cellulosic material can be sewn, blanked out, routed and cut into any desired shape. They can be drilled with the same tools that are used for metal if care is taken that the plastic does not get overheated. Thick sections can be turned on the lathe in much the same manner as wood turnings are made. Surfaces can be stamped or embossed. By cementing sections to each other, articles can be fabricated which would not be economically possible by other methods. In making rigid containers, sheets or films can be formed under heat and pressure and the edges beaded to make an attractive finish.

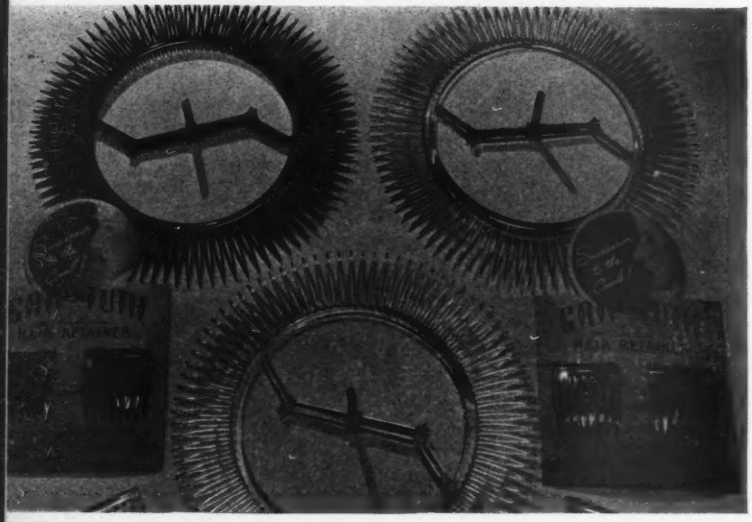
Moisture and Chemical Resistance. The cellulosics (and many other plastics) absorb small amounts of moisture. This property shows up in two ways: in change of dimensions and warpage.

The cellulosics differ among themselves in their moisture sensitivity and in their form retention qualities. The most dimensionally stable is ethyl cellulose, followed by cellu-

Real flowers preserved in natural color in sheets of Lumarith add new beauty to lampshade design.



The versatility of Celluloid allows unusual patterns in toiletries die molded, machine or hand fabricated.



Lumarith combs in circular form as they come from the mold to be cut into familiar comb lengths.

lose propionate, cellulose acetate butyrate, cellulose nitrate and cellulose acetate, in that order. The "hard" formulas are always more rimensionally stable that the "soft".

Chemical resistance varies with the basic type of cellulosic, the formula and the reagent, so that it is advisable to test each reagent for each application unless specific data are available. On the whole, resistance to perfumes, essential oils and alcohols, and to strong acids and alkalis is not satisfactory. However, cellulose nitrate is unaffected by sulfuric acid (and so makes useful battery boxes) and ethyl cellulose has excellent resistance to alkalis. Grease and fat resistance are excellent, and a valuable asset in the packaging industry.

With the exception of ethyl cellulose, the cellulosics are resistant to dry cleaning fluids and to gasoline.

An important consideration in packaging and storing is compatability between the cellulosics and other plastics. For example, the packing together of polystyrene and cellulose acetate combs has sometimes resulted in the clouding of the former.

SELECTING THE RIGHT PLASTIC

In evaluating a cellulosic plastic for use in a given product, consideration must be given to four points:

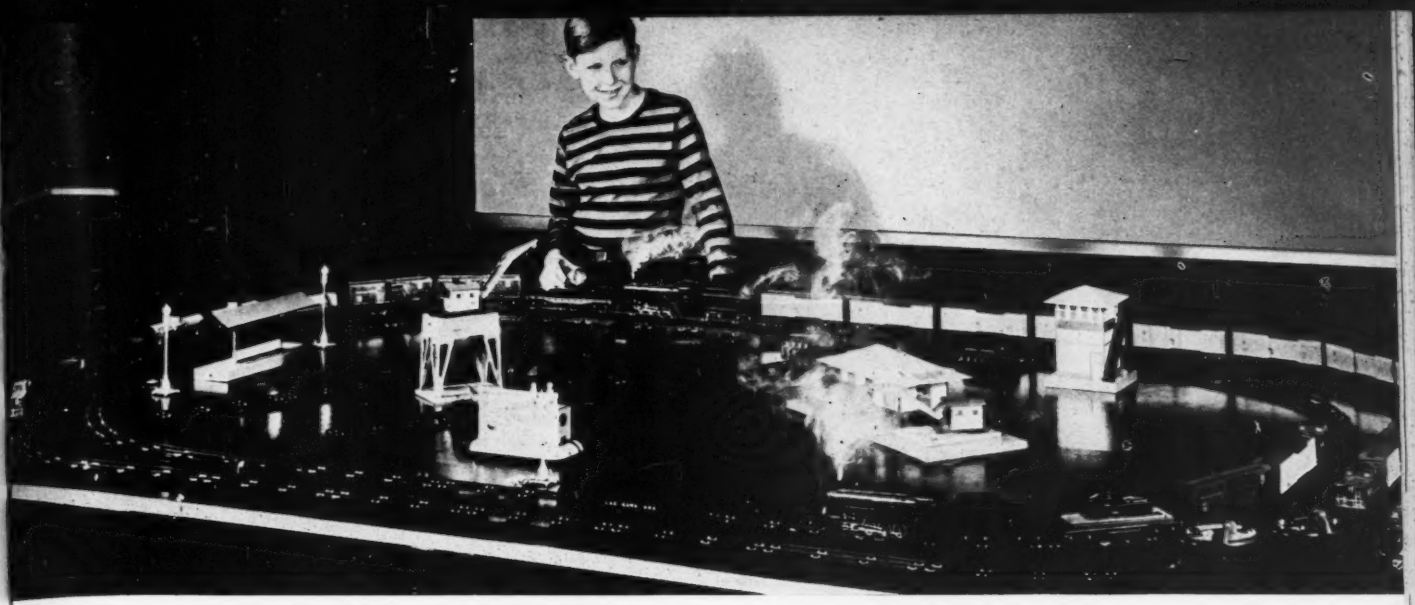
(1) The suitability of the material for that end use. For example, it would be misapplication to use a stopper made of cellulose acetate for a liquor bottle, since in time this plastic will be affected by alcohol.

(2) The qualities desired in the finished article. For example, the formulas for toothbrushes are required to stand hot water without loss of shape and without softening, so that the bristles will not be loosened.

(3) The design of the piece. When plastics have replaced another material, they have usually inherited a design which was made to suit the previous material. For this reason failures in service have been reported for which the plastic was blamed, but which were really caused by inadequacies of the design. For example, plastics powder compacts in a great variety of designs have been produced; some are attractive and useful, others are not even attractive. Sometimes the plastic compact was made with walls that were too thin and in "soft" materials which tended to warp out of shape. The successful compacts are those which have been designed to suit the particular plastics materials used.

(4) The production problem involved. The fabricating technique is an important factor in deciding the cellulose plastic which will be used in a particular application; and its suitability to cementing or lacquering or other finishing operations must also be considered.

For example, the best plastics material for the making of prescription glass frames is cellulose nitrate. It has the required stiffness, strength and form-retaining properties, as well as excellent colorability and surface finish. However, this plastic cannot be injection molded, so the frames are made by blanking out from sheet stock. For sun glasses and safety goggles the speedy mass production of injection molding can be obtained, but another material must be used—cellulose acetate, cellulose propionate or cellulose acetate butyrate.



Minature railroad cars of Lumarith are exact models of the originals. A small engine which hauls five metal cars can pull as many as 22 of this lightweight model.

TYPICAL APPLICATIONS OF CELLULOSICS

Injection Molded Items: Automobile trim and parts (knobs, escutcheons, buttons, steering wheels) are well made of the cellulosics—colorful, hard-surfaced, glossy. Molded over a metal insert, the cellulose plastic makes a tough steering wheel, pleasantly warm to the touch.

Vanity cases and lipstick holders are easily fabricated of the cellulosic plastics, and are colorful and smooth-surfaced. For lipstick holders, the proper choice of formula is important. Some plasticizers tend to make the lipstick "sweat", and "soft" formulas result in holders which do not retain their shape satisfactorily in service. However if the formula is well chosen and is not the scrap material which was commonly used during the war, very attractive and serviceable lipstick holders can be molded.

"Soft" formula cellulosics are injection molded over metal inserts to form tough tool handles.

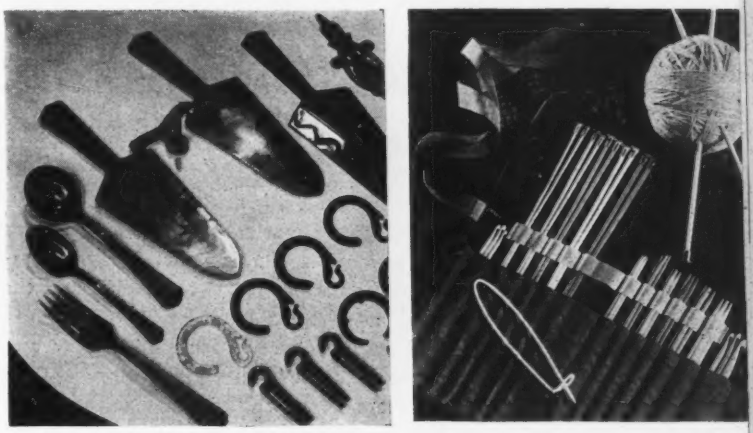
Toys, buttons and novelties are economically mass-produced of "soft" cellulosics.

Toothbrushes, hairbrushes and combs are excellent applications. Good shape retention is achieved by the use of "hard" and "medium hard" formulas.

Many fountain pens and pencils are injection-molded. A "hard" formulation gives stiffness with very thin walls.

Extrusion-Molded Applications. Well produced by the extrusion molding process are refrigerator breaker strips; decorative trims; rods for a variety of end uses, such as luggage handles, tool handles, buttons; tubes for fabrication into toothbrush containers, pens and pencils, etc.

Sheet-Stock Applications. Fountain pens of unusual color patterns can only be fabricated from sheet stock, and are only available in cellulose nitrate and acetate. Other applications are the prescription glass frames already mentioned. Thin sheets of cellulose nitrate and cellulose acetate are softened in a solvent and then stretched over wooden forms to make shoe heels, clothes hampers and toilet seats. Playing cards are made from stiff sheets of cellulose nitrate which have been given the necessary surface finish to take printing. Cellulose acetate sheets in light translucent colors are used for pleating and painting and fabricating into very attractive and popular lines of lamp shades.



Diverse Lumarith products. Left, shower hooks, clothespins and tableware. Right, for knitting; needles, counter, case and pins.

Transparent Film Applications. Attractive, thin, transparent wrapping materials are made in huge quantities from cellulose acetate and cellulose acetate butyrate, marketed under a number of trade names. (They are also made of cellophane, which is a non-plastic material made of regenerated cellulose.) The thin films of the cellulosic plastics have better aging qualities and shrink less than the cellophone.) They are used for wrapping articles where moisture-proofness is not essential. Cellophane is used where a moisture-proof wrapping is required.

Thin films are used, together with other materials, such as aluminum foil or paper, to make a many-layered wrapping paper. Laminated scrim is prepared by cementing cellulose films on either side of woven scrim.

Cellulose acetate film is the best material available for the display "windows" in cardboard and paper boxes.

Cellulose acetate film has a higher permeability to oxygen and carbon dioxide than any other film on the market. It is therefore the best material for packaging things that have to "breathe", such as leafy vegetables.

DR. ROBERT J. MOORE

THE *Phenolics*

By Dr. Robert J. Moore,
Bakelite Corp.

BACK in 1909, up in Yonkers, New York, a tall, young chemist named Leo H. Baekeland invented a phenol-formaldehyde resin process, the products of which could be cast, laminated, molded, or used in dozens of other ways. That marked the founding of the synthetic resin plastic industry, as it is known today.

This new phenolic-resin gave us an engineering material of attractive appearance which smoothed the way and speeded the development of many great industries. The telegraph, the telephone, automatic automobile and aircraft ignition materials, later the radio, radar, television, and countless new era home and industrial appliances were ushered in, were accelerated, by the use of this new plastic material.

Phenol, better known as carbolic acid, and formaldehyde, another popular poison, are reacted together in the presence of a catalyst (which is something that speeds the reaction but does not take part in it). The phenol and the formaldehyde combine to give a resin.

This basic resin is used in a great many different ways: as an impregnant, or bond; as casting material; as a basis of many paints and varnish materials; and when properly pigmented and combined with certain types of fillers, as molding material. It belongs to the group called *thermosetting* plastics which upon heating become insoluble and infusible.

We take this phenolic resin, before it is completely processed, powder it, mix it, heat it, knead it, use a filler (frequently wood flour), pigments, and lubricants, and we end up with a powdered substance called a molding material.

This is fed into a press, heated under pressure, forced into the die where it is molded. Being a thermosetting material, it cannot be resoftened; it cannot be remelted.

The common filler used is wood floor. If we want greater resistance to impact, we use chopped fabrics. We can use powdered mica. That gives us a high dielectric, a highly electric resistant material. We can use asbestos to give a heat resistant material. If we want something with low friction, we use powdered graphite, and so on.

These standard grade phenolics all have certain desirable characteristics such as good surface appearance; strength; and dimensional stability, which is the ability of the plastics to retain their size and shape on aging or under changes of atmospheric condition. They have good resistance to moisture and are very reluctant to burn. They are not conductors of heat and electricity.

Now, with slight adjustments in the manufacturing of the resin, and with the proper selection of filler, we can change the characteristics of the molding material to meet specific requirements. We have several different types of molding materials under the heading of phenolics. The first type of phenolic with the wood flour filler, is called the *general purpose material.* That is probably the one most familiar to you. Your telephone hand set is general purpose phenolic. Most of the little electric plugs and gadgets, a great many of the bottle caps, radio cabinets, clock cases, buttons, machine housings, business machines, toys, and a certain amount of kitchen utensil handles, office and desk equipment are general purpose phenolic.

When you realize that powder is poured into a mold, the plunger comes down, fills the mold, and, in about two minutes comes up again, and a radio cabinet is released completely finished, dimensionally stable, you can see the tremendous value that phenolics have had in modern industry.

Besides the general purpose materials, there are a great many specialties. One is classed as *impact material,* material which takes a terrific blow. They used to mold the heads of golf clubs out of these impact materials. They contain generally chopped up fabric, and they were very important during the war.

Another type of phenolic molding material, is the so-called phenolic *molding board.* There we take the resin and the fillers and we combine them in paper making equipment so the stuff comes out looking like a piece of paper board. This board is used in sheets or it is blanked out, punched out in shapes and it makes an impact material which flows and works in an ordinary die. It produces what we call low bulk factor, yet it has over a tenfold increase in impact strength over the standard materials. An example is the little housing of the motor on the Singer sewing machine. The parts are blanked out, put together, placed in a press and heated. The stuff flows together and molds into the finished part.

Another type is the *heat resistant* material. Due to the type of filler and the processing of the resin, it has good heat resistance. It is used in heater appliance plugs.

The fifth type is the so-called *low loss,* the special electrical insulation material. That is used for the tube bases in radio tubes of high frequency, in magnetos, and crystal-holders.

Type six is called *chemical and water-resistant.* The chemically resistant materials go into special closures, such as bottle caps for Clorox. Another good example is the modern plastic washing machine agitator which has to

stand warm-to-hot water plus soap and cleaning compounds. The interesting thing about that type of plastic agitator is that it is much easier on the clothes that are washed, than the formerly used metal ones. There is a difference of seven to one in the ability of the clothing to resist wear.

Then we come to two grades that are not widely used but are important in their place. One is the *low friction* material generally used with graphite as its filler. These are used as bumper shoes for automobile doors. Every door has at least two of these shoes so that for a four-door car there are eight of these small bumpers. That is the material that takes the slam of the door with low friction.

Finally, there is a material called *X-ray material,* and due to the filler in that we have opacity to X-rays as well as high electrical insulation.

There is quite a range in the physical properties of materials that may be selected in any one of these classes of phenolics. Bear in mind that each one of these groups in turn is reclassified into several types dependent upon flow and some other properties. We have a very diverse range in the properties of the phenolic molding material alone, and also, we have so many other classes of molding materials besides the phenolics that the selection of the one plastic best suited for a finished molded part is very important.

The engineer is confronted with the problem of the best combination of properties for the specific application he has in mind. That is true whether the material is to be used for some industrial application or for the personal use of the purchasing public—the proper plastic must be selected for that use. Merely to specify plastic is not enough.

During the war it was impossible to obtain the wide range of plastics, so the manufacturer used what he could find. There were many cases of boxes with lids that did not fit, lipstick holders that were not resistant to salves and which warped out of shape. Such products reflected on the entire plastic industry, no matter what anyone was manufacturing.

The ultimate consumer is generally unfamiliar with plastics. That is where the technical merchandiser comes in. The merchandiser who is properly trained in materials offered for sale can render a substantial service in modern retail selling.

The successful molded part requires the cooperation of a great many individuals from its inception on. First, there is the engineer who designs the article, there is the draftsman, the toolmaker, the molder, the production engineer, and where styling is a factor, the artist-designer. However, this production must be augmented by technical, trained selling. The man who sells the thing to the ultimate consumer must know something about the type of product he is selling. It isn't enough for him to sell somebody by telling him, "This is a plastic." He must be able to tell him whether that is a plastic which is stable, or water-resistant for a certain purpose or which will retain other characteristics. When this plan is followed, this cooperation of the engineering and those in the molding industry, with the technically-trained selling force, then plastics are sold with confidence and used with satisfaction.

The motor head, wheels, de-mother unit, sprayer head and attachment rim on this vacuum cleaner are molded of Bakelite.

The Bakelite heat-resistant handle on this kettle insures a cool grip and contains a trigger release which lifts the spout lid.

This toaster has its base and fittings molded of Bakelite providing durability and excellent electrical insulation.

Ureas and *Melamines*

By Dr. M. H. Bigelow,
Plaskon Division, Libbey-Owens-Ford Glass Co.

UREA materials were developed to meet a demand for plastics that had the physical properties of the phenolics and yet embodied the pleasing colors, light pastel shades and non-odor of a more inert material.

The investigation of urea materials started in 1931, its immediate purpose being to find a suitable plastic for weighing scales. The material then being used was cast iron and enamelled steel. A grocer's scale made of these weighed about 185 pounds. The manufacturer wanted a material lighter than steel and equally permanent. We developed a thermosetting resin which would not warp on standing, which would not scratch or mar or change color or give off an odor to make anything taste badly.

The urea molding compound consists of urea and formaldehyde and a filler—in this case cellulose pulp. It is a very special grade of pulp, pure and colorless, because we take pride in making a material which basically has no color. (This is one of the urea characteristics which distinguish it from the phenols.) Pigments are added, and a lubricant to help the material flow, and we come out with a granular powder which is the molding compound. Like other thermosetting materials, urea is molded into finished articles by the compression molding technique.

The operating mechanism of this electric shaver is enclosed in a color case of molded Plaskon.

Properties of Ureas. In color stability the ureas are as a rule superior to phenolics. That is because under sunlight the phenolics get a little yellow. In ureas we don't have to worry about that, but we have another worry. We started out making something like 14 standard colors, and before two years were over we were making something like 15,000 colors. Sometimes the color differential we are required to make for two customers is so small that it is awfully hard for the people making them to tell the difference between them.

Urea plastics played their part in the Better Light-Better Sight program. The I. E. S. engineers devised lights which utilized a glass bowl, and a reflector. The height of the lamp was specified so that the shade reflected down on the work surface a specified per cent of the bulb's candlepower, another specified amount was to hit the ceiling and be reflected back. It required a large shade. The height and design was such that even with several pounds of metal in the base the glass reflector was so heavy that the lamp would tip over. So we developed a lightweight reflector of the urea plastic, which was even more efficient than the glass reflector.

And that brings me to a point that should be stressed: If you are selling a plastics item, sell it as it is, and don't recommend that it be used in any other way. In the case of the I. E. S. student lamp the specifications call for a bulb no stronger than 100 watts to be used with a 6-inch reflector. If the owner decides to use a 150 watt bulb in it the plastic reflector gets overheated, discolors and gives off the foulest odor you ever want to smell. Another thing that has been done is to place a plastic disc over the top of the lamp to keep the light from illuminating the ceiling. That defeats the whole idea of indirect lighting, and it also builds up heat on the inside so that plastic reflector begins to break down.

The ureas are remarkably unaffected by water and chemicals. We do not recommend that they be immersed for long periods of time in boiling water, which will crack and craze them. Articles made of them can be sterilized, however.

Good engineering is essential. After you take these plastics out of a mold hot, they shrink until they get down to a certain standard dimension. Leave them in a dry atmosphere for a long time and they shrink a little more. In a damp atmosphere they expand a little bit. Good engineering and design takes these factors into account.

We cannot mold plastics in thick cross sections over a half inch thick, because under pressure you will not get a completely homogenous material. The result is shrinkage and warping.

Thick sections in general are poor applications for ureas. A doorknob made that way, for instance, will crack and dirt will get into the crack and discolor the knob. It might be perfectly all right for a dark phenolic, which wouldn't show the dirt. We get around the problem of thick cross-sections in ureas by not making solid handles—the mold, cut out in the back, is more difficult to make but the piece will stand up.

The material manufacturer doesn't like to get into a store and see a badly designed, unserviceable article made of his plastic. It isn't good for our income. It isn't good for the health and future of the industry. Therefore, we work closely with the molder and if we see a design we know won't work we tell him so.

We had to go to a lot of trouble to convince temperamental artists about it, but piano keys made of urea are just as good as or a little better than ivory keys. They're easier to keep clean and the more you handle them the better feel they have. That's characteristic of thermosetting plastics—they don't accumulate grease or grime, and they actually become more lustrous with use.

In paper manufacture, a small percentage of the urea-formaldehyde resin, with no filler in it, is used to make wet-strength paper. Good quality paper bags are made that way, and paper towels.

The same resin makes fabrics crease-proof. We found that out in an interesting way, which also illustrates the point that every time you do something to improve your product in one direction you take something away from it in another. We developed a urea-formaldehyde solution to make woolens color-fast. It worked—the color was set absolutely permanently in the cloth. But the cloth could no longer be pressed to a crease.

If you take the urea-formaldehyde resin and put a little wood flour in it you get an adhesive. Phenol formaldehyde resins are used for this purpose too. Both give a bond so tough it will not break. The glue-lined wood always breaks elsewhere than in the glue line. Plywood and practically all the building materials today are using urea or phenol or melamine formaldehyde water proof bonds. These resin adhesives don't lose their strength in hot water; they are unaffected by fungi; they are as permanent as the wood itself, if not more so.

It is safe to say that a great many things you buy and sell in the future will be molded of laminated materials—wood or fabric with a plastic bond.

Ureas have these good properties: They do not change color; they have a hard surface; they do not scratch easily; they wear better for handling; they are strong.

On the other hand, they are brittle. They have to be designed around that point. You don't want to use a urea resin for an item that is going to be dropped frequently unless it is designed that it will mechanically absorb the shock. And you cannot take ureas and put them in boiling water without having deterioration.

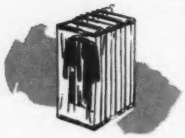
Melamines are in all their properties exactly the same as ureas, with the added quality of greater resistance to effects of humidity.

Housing of this retail weighing scale is made of Plaskon urea, will not scratch, mar or discolor.

Many of the airlines make use of this Plaskon melamine tableware for serving in-flight meals.

Be sure you buy

The growing use of vinyl plastics would be a happy situation for all of us were it not for the appearance in fashion and home accessories, of many plastic films and sheetings of dubious quality. Some of these anonymous materials have been produced from scrap. Others have been improperly compounded and fabricated. Still others are being put to end uses for which they were not intended.



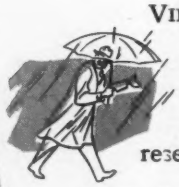
The resulting inferior performance of these nameless plastics has created dissatisfaction among their buyers, sellers and users... has cast a shadow on the integrity of tested reliable brands.

Only plastics that have been chemically balanced for a specific end use ...only plastics whose worth has been measured by millions of stringent wear tests... only plastics whose quality is periodically checked... can be counted on to render superior service.

VINYLITE Brand Plastics, as formulated for your use by Bakelite Corporation, are just such square-shooting materials. Each of the types of VINYLITE Plastics designed for a specific career... in shoes, raincoats, handbags, etc.—is kept up to the mark through continuing research, and through regular inspection by Better Fabrics Testing Bureau.

You and your customers can expect these qualities in every VINYLITE Brand Plastic formulation:

1. Water- and mildew-resistance
2. Scuff-, craze- and weather-resistance
3. Non-fade colors
4. Lasting luxury of appearance
5. Long-term wear



yidentified Vinylite TRADE—MARK plastics

The increasing demand for merchandise bearing the VINYLITE Brand trade-mark is proof that your customers have confidence in, and want to buy, articles made of this tried-and-true brand of plastics.

For your share of profits in plastics, buy identified VINYLITE Brand Plastics—and feature the identification when you sell.

YOU KNOW IT'S RIGHT IF IT'S

BAKELITE CORPORATION, *Unit of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

THE Vinyl

THE vinyl plastics now commercially available are shown in the following chart.

TRADE NAMES	VINYL RESIN FAMILY MANUFACTURER	CHEMICAL NAME
1. Vinylite-A Series	Bakelite Corp. E. I. du Pont de Nemours	Polyvinyl Acetate
2. PVA	E. I. du Pont de Nemours	Polyvinyl Alcohol
3. Saran	Dow Chemical Company	Polyvinylidene Chloride
4. Butacites Saflex etc. Vinylite-X Series	E. I. du Pont de Nemours Monsanto Chemical Co. Bakelite Corp.	Polyvinyl Acetals a. Formals b. Acetals c. Butyrals
5. Geon-100 Series	B. F. Goodrich Chemical Co.	Polyvinyl Chloride
6. Vinylite-V	Bakelite Corp.	Copolymers of Vinyl Chloride & Vinyl Acetate
7. Geon-200 Series	B. F. Goodrich Chemical	Copolymers of Vinyl Chloride & Vinylidene Chloride

The first material on the chart is used principally as an adhesive. The second one is used in adhesives and in film forming. Saran is familiar to most retailers and is used principally as a monofilament or thread in the manufacture of window screens and upholstery materials. The fourth group were first used as the center ply in safety glass and are now being promoted for use as fabric coatings on drapes and upholstery.

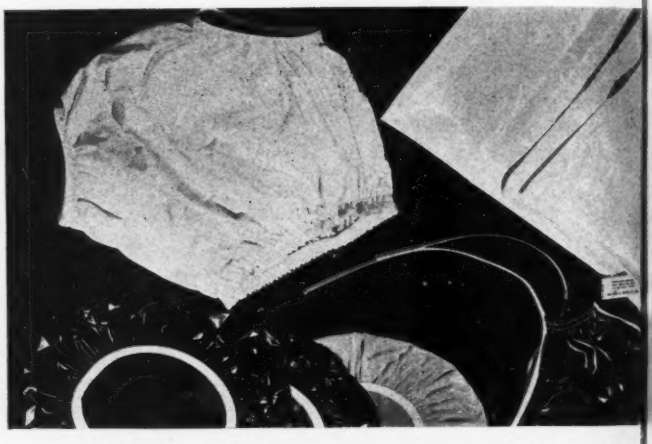
The last three types are notable for their versatility and have a wide variety of end uses such as: raincoats, shower curtains, baby pants, upholstery, garden hose, handbags, shoes, fly swatters, storage batteries, floor coverings, bowl covers, table cloths, wall paper coating, belts and luggage. Some of the more highly advertised product trade names are Krene, Koroseal, Vinyon, Duran. There are, of course, hundreds of others.

Producing the Resin. Although naturally the methods of manufacture of the different vinyl resins vary somewhat, it will serve our purpose to confine our discussion to one type, Geon, a polyvinyl chloride. It is prepared from salt, water, limestone, and coke. One of our neighbors in Louisville makes acetylene from the limestone and coke and sends it over the fence to our plant where we combine it with hydrogen chloride, another gas, which we make from salt water. From this we get vinyl chloride which is our principal monomer. The polymerization process results in polyvinyl resin. These resin polymers usually exist as fine, free flowing white powders which will soften under heat and harden upon cooling—in a word, they are *thermoplastic*.

With the exception of a few minor applications where hard brittle products are desired, the resins must be mixed with a class of materials known as plasticizers. This combination results in products which vary from quite hard, containing 2 per cent plasticizer to a soft composition containing over 50 per cent plasticizer. In addition to plasticizers, we add stabilizers, colors, processing aids, and other ingredients in order to impart versatility and beauty.

Films and Sheets. As a first step in all of the processing operations the plasticizer is mixed with the powdery resin and whatever other ingredients are to be used. This job involves a blending and heating action. The product is removed in rough sheet form. In the production of film such as is used in making raincoats or shower curtains a calender

Geon resin produces a calendered, unsupported film for the manufacture of rainwear and shower curtains.



Shower cap, bowl cover, crib sheeting and baby pants of unsupported film made from B. F. Goodrich Geon.

These handbags and belting are some of the many pressed, polished and calendered products made from Geon.

PLASTICS

By M. Scott Moulton.
B. F. Goodrich Chemical Co.

is used. This machine consists of three or four heavy metal rolls which can be heated. These operate against each other and squeeze the hot plastic into a thin sheet. If the film is to carry a pattern, this is applied in a printing machine.

In the manufacture of heavier sheeting such as upholstery material the calender rolls are set farther apart and the sheet after it is produced is occasionally printed to give a mottled appearance and almost always embossed to give a textured effect. When backing is desired, it is combined with the plastic by passing it between the calender rolls so that the hot plastic is squeezed onto the surface.

Some of the thin film on the market is made by casting resin in a liquid medium onto a continuous belt and then, after drying out the vehicle, stripping it off the belt. Coated fabrics can not only be prepared by the calendering method described above, but also by a procedure similar to film casting. Loosely woven fabrics such as marquisette are commonly coated by a dipping operation. After the fabric passes through the solution of resin it usually travels vertically through a drying tower in order that the excess material can drain off and leave a suitable thickness of coating.

It is an interesting paradox that a loosely woven fabric is actually weakened by being coated. The answer to this problem lies in the use of strong fabrics such as those woven from Fortisan or threads of similar strength. Thin raincoats of this type have been in use for over five years without tearing.

An extruder is used in preparing hose or the filaments used in woven fabrics. A great deal of Saran is processed in this fashion.

Molded Vinyls. Molding is accomplished by forcing the plastic into a cavity in order to give it a desired shape. Much of the present molding is done in so-called injection machines in which the plastic is pre-heated to a soupy condition and then injected under pressure into a cool mold where it hardens quickly. This method permits much faster operation than the other molding procedure because there is no delay while the operator waits for the mold to cool. These machines are automatic and need very little attention except to cut the molded items apart.

Finishing. Monofilaments are made into salable articles by simply weaving into fabric. Film or coated fabrics are joined either by sewing or by heat sealing or both. Molded items usually require a trimming operation to remove "flash" which is the small amount of material which occasionally flows out through cracks at the mold openings.

Selection for Use. Although we may start with a single member of the vinyl class as our raw material, it is possible to obtain a variety of products so different in properties as to give no suggestion that they had a common source. For example, there is little similarity between a floor covering and baby pants. Perhaps more important is the fact that plastic articles made from the same base resin and having identical appearance can through compounding variations exhibit different properties. Some film is quite resistant to burning; whereas others using a different plasticizer would be quite hazardous. These facts are important to you for two reasons. One, because they demonstrate that the selection of material by the fabricators may, through a desire to make an extra profit, or in the case of others, because they are beset with raw material shortages, compromise their integrity and cause them to use improperly designed compounds. Although the vinyls may have some shortcomings, these definitely need not be present when times of good supply are with us again.

A raincoat made from calendered film permits illustration of many points. Unlike rubber, the vinyls can be made transparent or translucent and can be colored brightly. Their ability to heat seal permits them to be seamed more attractively and with a stronger bond. Because of the fact that vinyls have what we call a higher modulus than rubber, they can be used in thinner form or even without fabric backing, without danger of undue stretching. This permits a lighter garment, and one which can be folded into a smaller space. Another example of this quality is found in the light weight garden hose where vinyl plastic can be used without any need for a heavy fabric insert as is used in rubber hose.

Window screens may be made of extruded Saran. They won't rust, or cause the side of the house to be stained after a rainstorm. If it is punctured, the strands can be straightened out and made as good as new. It never needs painting, and at present is comparable in cost to other screens.

One of the soundest applications of vinyls is in the manufacture of upholstery materials. Here we make use of their resistance to abrasion, to flex cracking, to burning, to general aging and to staining by water, greases, alcohol and so forth. As synthetic products, they are uniform in thickness, and quality, and come in standard sizes. They can be made in bright colors and they cost less than good leather. One thing that must be watched is tear resistance. The upholstery must be properly applied by using sufficient tacks and cutting the materials to avoid sharp angles which will lead to splitting.

Limitations. Now for some of the faults which show up if the vinyls are improperly handled. When vinyl film is sewn, it is important that proper stitch frequency be used. If too many stitches are used, the holes which are formed suggest the familiar "tear on the dotted line." Too few stitches impose an undue strain on each individual stitch. The proper frequency is generally considered to be about seven per inch.

If in the original mixing of the plastic, an imcompatible plasticizer was used, it will result in a garment which exudes or sweats plasticizer and is either oily to feel or perhaps results in a sticking together when it is folded. This bleeding of plasticizer may also cause trouble due to its action on varnished surfaces and in handbags particularly there has been difficulty since these are frequently placed on desks and tables. If the manufacturer of finished goods makes the error of using vinyl and pyroylin plastics together, he is probably in for trouble due to the effect of the vinyl plasticizer on the pyroxylin; it makes it sticky.

Another complaint has been caused by the use of plasti-

cizers that have a very unpleasant odor when they get warm.

If the calender which squeezes the plastic into a continuous sheet is not hot enough or is operated too rapidly, it will give a film which has dull streaks running through it. These are caused by lumps of material which were not completely heat softened. Some film has a series of light and dark marks across it. These are caused by poor gears on the calender rolls which result in jerky operation. If the calender is run too rapidly, or is not hot enough, it may result in film which has a residual shrinkage tendency. Through improper compounding or processing, film with very poor tear resistance may be produced. I have already mentioned the possibility of flammability with miscompounded plastics. The use of poor coloring agents may result in fading as it will in any type of merchandise.

Handbags. The qualities which make vinyls proper for use in handbags are a remarkable resistance to cracking, a resistance to the effect of water and an ability to secure, in the case of patent type, a truly jet black color. If improperly made, this very desirable handbag can become the worst kind of headache. An incompatible plasticizer or other ingredient can exude and ruin a varnished table. Of course, when the proper materials are available and are used, this will not occur at all.

All of the vinyls are thermoplastic, and if a vinyl handbag is placed on a hot radiator it may deform somewhat and end up as "returned merchandise". The only immediate answer to the problem of heat softening of plastic handbags is through informative labeling.

Shoes. In speaking of faulty vinyl merchandise, perhaps the best known example is the shoe sole. It happens that one of the outstanding characteristics of vinyls is their resistance to flex cracking. A piece of properly made vinyl sheeting tested in our laboratory has withstood over three million flexures, and yet, much of the vinyl soling which was sold during the war failed by cracking. The reason was that the only material available for civilian usage was scrap plastic stripped from insulated wire. This was not plasticized properly for shoe sole use and in addition, it was frequently diluted with cheap extenders. The result was many complaints, so many, in fact, that it may be a long time before vinyl soling gets its proper share of the market again.

It is my firm conviction that *by intelligent selection of materials with respect to end uses and rejection of the clearly unsatisfactory products,* it should be possible to avoid difficulties.

The customer should be warned not to expose vinyls to excessive heat such as occurs in ironing. Although these products will withstand ordinary contact with solvents, it is probably unwise to clean most of the vinyls with dry cleaners.

Nylon

By Dr. R. B. Akin,
E. I. du Pont de Nemours & Co.

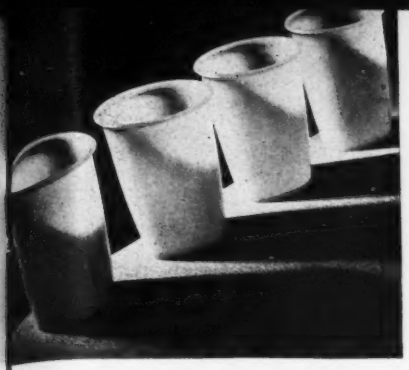
WHILE certain articles made from nylon have trade names such as "Exton" and "Prolon", the word nylon itself is not considered by the du Pont Company as a trade name. Rather, it is generic—a family name assigned to materials which the chemist calls synthetic linear superpolyamides. Nylon then covers not just one resin but rather a family of resins similar in chemical construction. A dozen types are now in commercial production, each for a different use for which its individual properties make it well suited. Other types are being developed, and ultimately several dozen types may be offered, ranging from material even more flexible than wristwatch straps to material more rigid than bathroom tumblers. It should be borne in mind that this range of properties is attained by chemically changing the construction of the nylon rather than by the addition of plasticizers.

In practice, this means that the nylon used in hosiery is chemically different from that used in toothbrush bristle, and each of them is different from the nylon used for molding a bathroom tumbler and a still different type is that used for molding a flexible wristwatch strap.

In 1937, experimental toothbrushes were produced by the du Pont Plastics Department from some of the early nylon which had been extruded into a continuous filament and then cut into short lengths for stapling. In that same year sewing thread from the new fiber was sold on a limited commercial basis and experimental stockings were knitted. By the Fall of 1938, the Plastics Department at Arlington, New Jersey, was in full commercial production of toothbrush bristle and the brushes were available throughout the country. Textile developments had continued and in October of 1938 the name nylon was announced as a generic name to cover these new materials.

Fishing leaders of nylon monofil, a single-strand product of relatively large diameter, were first put on the market in January of 1939. Hosiery of nylon yarn was displayed publicly for the first time at the San Francisco World's Fair. Surgical sutures of nylon monofils were first sold in May, 1939, and hosiery was commercially sold in October of that year. At the end of 1941 nylon had already been proven in numerous applications for military fabrics and electrical insulation and was well able to replace silk, of which the foreign sources had then been cut off.

Nylon in woven, knitted or filament form shows excellent resistance toward attack by fungus and insects, is resistant toward perspiration and retains its tensile strength well even during outdoor exposure. These were obvious reasons for the choice of nylon for parachute fabric and cord, and also for tents, ponches and flotation gear used in the Southwest Pacific and in the cold Italian campaign.



Nylon plastic makes a tumbler that is exceptionally tough, translucent and can be sterilized in boiling water.

The fact that nylon can be sterilized makes it possible to use it for the molded hub of this hypodermic needle.

This nylon Crown slide fastener is immune to dry-cleaning solvents and is unharmed by ironing temperatures.

NYLON MOLDING COMPOUNDS

In 1942 nylon, as a plastic for molding in commercial injection machines, was introduced for numerous war applications. Some of these, of course, are no longer being molded, but experience gained in these uses provides a sound background for present exploration of consumer uses.

The du Pont Company regards nylons of the types thus far offered for plastic molding as primarily materials for industrial and utilitarian purposes rather than as a glamour plastic such as the acrylics. One type of nylon is already well established as a material for combs, bathroom tumblers, and the hubs of hypodermic needles. Softer types are being evaluated for flexible leather-like sheet and still others are being used commercially in the electric wire and cable industry.

As a plastic, the most widely used nylon is the one which you have probably met in combs, etc. As an injection-molded material this type, FM-1, is used for the following five reasons:

1. Its ability to hold its shape at elevated temperatures.
2. Its ability to remain tough and strong at low temperatures.
3. Its combination of toughness and hardness; the material is best described as horny or slightly flexible, rather than rigid.
4. Its chemical resistance.
5. Its ability to be molded into tough thin sections.

The resistance of this type of nylon toward heat is supreme among injectable plastics. The material is form-stable up to 400° F, although flexibility at elevated temperatures may limit service temperatures to the neighborhood of 300° F. It does mean that nylon is the only injection-molding material which can be recommended for sterilization by steam. For most uses where nylon will be employed in the home, the heat-resistance will be more than adequate. Thus, a slide fastener molded from nylon can be ironed with any iron temperature safe for the fabric.

Resistance to low temperatures is important in many industrial uses. You can safely recommend any of the present plastic types of nylon for freedom from embrittlement at temperatures to be encountered in refrigerators or in winter sports equipment.

The horny or slightly flexible quality of nylon was that property which led to our recommendation that it be employed as a valve-seating material for Navy torpedoes. It is likely that in the future you will find it in many industrial valves, and probably the hot and cold water faucets of your home will have long-lived valve-seats which have been injection molded to final form from one of the nylons. The same ability to deform slightly without actually flowing out of the way was the reason for employing nylon for hubs of hypodermic needles. Here nylon was chosen because of its ability to resist steam sterilizing, and to resist a variety of chemicals, and for its slightly flexible nature.

The resistance of nylon toward gasoline and dry-cleaning fluids is quite remarkable. Although there are now being manufactured several nylons which can be put into solution with alcohol, the standard injection types have complete resistance to all solvents except phenol or formic acid. Thus, the solutions normally used in hospital work are without effect upon the injection grades of nylon and it is also of interest to note that a slide fastener can be dry-cleaned without any worry about distortion or discoloration.

The stamina of nylon in toothbrush bristle is well established, and as a matter of fact over 90 per cent of this year's production of toothbrushes will be bristled with nylons. The sparkling color of nylon jointly with acrylic backs has brought a renaissance to the hairbrush industry. Industrial polishing brushes and brushes which supply dyestuff to textile printing rolls are further examples of the resistance to wear and to chemicals which this synthetic filament offers. So far as filament applications are concerned, you need not fear that around the household there would be chemicals which would damage the nylon bristles. It is true that prolonged immersion in alcohol or hot water will soften the bristles, but when the bristles are allowed to dry, they will regain their rigidity.

More flexible nylons may ultimately be seen in the form of wristwatch straps, notebook bindings and wallets. We have not yet decided what type of nylon will be recommended for that use, and hence commercial production is some months off. However, you should be prepared to receive such materials, as it is our present plan to introduce them because of their favorable properties: they will contain little or no plasticizer and therefore will not attack lacquered furniture; they will be tough, without objectionable stiffness at low temperatures; and they will have far greater resistance to plastic creep or permanent deformation at elevated temperatures than has been the case with the flexible plastics thus far explored.

Pick the Plastic that fits the Job

MELMAC® PLASTIC

APPLICATIONS

tableware
buttons
lighting fixtures and reflectors
ignition assembly parts
aircraft
automotive
tractor
switch boxes and plates
circuit breakers
terminal blocks
industrial control parts
meter terminal blocks
housings for electrical mechanisms
terminal blocks

ADVANTAGES

high dielectric strength
good arc resistance
resistance to moisture absorption
resistance to staining
resistance to boiling water
extreme surface hardness
permanent color
translucent or opaque
superior heat resistance
resistance to shock and breakage
non-inflammability

BEETLE® PLASTIC

APPLICATIONS

buttons
closures
bottle caps
housings for
radios
barometers
thermometers
clocks
electric razors
automatic timers
electric cleaners
jewelry boxes
cosmetic containers
cigarette boxes
stove handles
wiring devices
lighting reflectors and fixtures
instrument parts
display cases and racks
kitchen and bathroom accessories

ADVANTAGES

brilliant colors
odorless and tasteless
chemical inertness
light weight
permanence of finish
lustrous surface
good heat resistance
good insulating properties
excellent light transmission and diffusion
resistance to wear and abrasion

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THE *Acrylics*

By Dr. D. A. Rothrock,
Rohm & Haas Co.

D. A. ROTHROCK

ACRYLIC resins are available in sheets, rods, and tubes, and molding powders. The sheets were developed first, in 1936. Today they are available in sizes up to five feet by seven, in thicknesses from slightly less than one-sixteenth of an inch up to three inches, and in a wide range of transparent, translucent and opaque colors.

Fabricating. Almost any machining operation that can be performed on wood or metal can be performed as readily on Plexiglas (acrylic) sheets. In addition, because the material is thermoplastic, the acrylics can be bent into almost any shape at relatively low temperatures. Strips of crystal clear material may be twisted, bent, stretched, even tied in a knot, and the sheets can be formed to a variety of three-dimensional shapes. This makes possible a greater variety of shapes than are practical in wood or metal.

Molding. Molding powders of acrylic resins first appeared in 1938. The molding method is used where large numbers of identical items, such as combs, brushes, "jewels", compacts, etc., are to be produced. The molding powders have been continuously improved in clarity, color, ease of molding, and resistance to heat and discoloration.

Either the compression or injection molding process can be used. In general the injection method is selected. There is a definite limitation on the size of the part that can be made by injection molding, although recent technical advances have increased the possible weight of a piece to two pounds.

From the point of view of ultimate service, molding and fabricating methods of production are equivalent.

Qualities. The acrylics are outstanding in (1) colorless transparency, (2) resistance to weathering and aging, and (3) dimensional stability. Plexiglas is as clear as the finest optical glass but only half as heavy. A properly cut and faceted piece has lively sparkle. Because the base resin is perfectly clear it is possible to produce a full range of colors. Plexiglas is odorless and tasteless, unaffected by alkalies, salt water, battery acid, and many other chemicals. It is strong, flexible and shock-resistant, though not, strictly speaking, unbreakable. The acrylics burn slowly when ignited with an open flame, but cannot be ignited by incandescent or red-hot metals.

Limitations. Being themoplastics, the acrylics cannot be used where excessive temperatures are encountered. They also should not be used where they are subjected to scratching. In a material as transparent as Plexiglas, scratches are very apparent, particularly in comparison with glass, which it resembles on superficial examination. Proper design can reduce the possibility of scratching and also make scratches less apparent. For example, an embossed tray does not show scratches as much as a clear one. Fortunately, light scratches can be removed by the use of proper cleaning solutions, followed by a coating with wax.

Cost. The acrylic plastics are higher in price than most other plastic materials. Just as your customers pay more for mahogany furniture than for pine, they will learn to appreciate the value of a material with the appearance and dimensional stability of the acrylics. Cost will, however, always limit the applications to which Plexiglas can be put, and perhaps fortunately will prevent its substitution for ordinary glass in applications where glass is a perfectly satisfactory material.

In the past seven years the cost of one-eighth inch Plexiglas has been reduced from $2.15 per square foot to 97 cents. But it is doubtful that it will ever be reduced to the point where it could compete directly with glass.

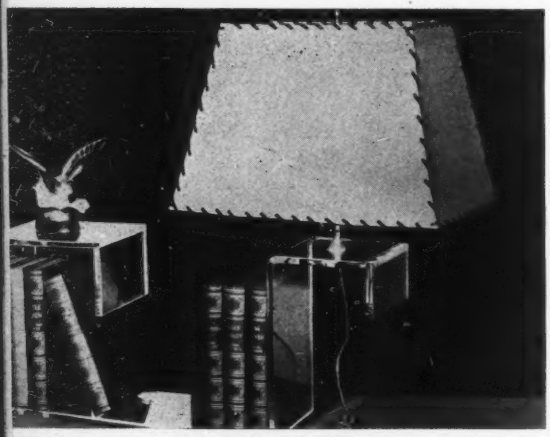
Quality Maintenance. We have a Plexiglas tag which we furnish to fabricators for use on merchandise which, in general, we feel is of good quality. We maintain a staff of designers, a model shop and a corps of service men to help the fabricator and molder improve the quality of the merchandise—as evidenced by the gauge of material used, quality of cemented joints, surface quality, and design.

Attractive clear Plexiglas serving tray with matching coasters. By J. Herbert Newport, Upper Darby, Pa.

During the war a large number of items were fabricated from small scrap pieces that were available without allocation. As a result a large amount of inferior merchandise was put on the market. Unfortunately it is impossible for any one company to police an industry and attempt to control all the items fabricated from its raw materials.

With a better knowledge of plastic materials retailers can insist on getting well-fabricated, well-designed articles. Among the many informative sources available to stores, the material manufacturers are usually large firms with complete testing facilities, and would be willing to advise you, particularly on applications involving their own materials.

I do not mean to imply that the fabricators and molders are not, on the whole, a reliable and well-informed group. But during the past few years we have seen the poor workmanship of a few threaten the reputation of the whole industry. Anyone interested in the future of the industry would be glad to assist and advise you in the purchase of plastic merchandise. It is through retail knowledge and understanding that satisfactory plastic items will eventually be the rule rather than the exception in the retail field.



This novel combination of lamp and bookends attracts many buyers. By Eljol of New York.

Cigarette boxes and candy dishes of Plexiglas, made by Camille Casting, Seal Beach, Cal.

Polystyrene

By Amos Ruddock
The Dow Chemical Co.

IT is of prime importance for retailers to acquire a good working acquaintance with polystyrene, for they are destined to meet it very frequently in the coming year. Indications are that in 1947, polystyrene (which was not introduced to the commercial market until 1937) may exceed the total annual prewar volume of all thermoplastic molding powders.

Polystyrene has been aptly called the "pig iron" of the plastics industry because it is so low in cost and so widely useful. It can be economically made into products ranging from combs (both inexpensive and of the highest quality) to the most delicate and accurate radar, television and radio parts; from battery cases to kiddie feeding dishes; from household funnels to interior parts of home refrigeration units. You will find it in containers, dials, buttons, hair ornaments, toys, record player arms, fountain pens, handbag frames, housewares, advertising specialties, displays, cases for cameras and even the lenses.

Cost. Polystyrene's price is low. It is derived from raw materials that are both abundant and inexpensive, and its production is on a large scale. There is further economy in the fact that polystyrene is one of the lightest of the thermoplastics and yields more finished pieces per pound than comparable heavier materials.

Other Characteristics. The material has remarkable dimensional stability—in other words it doesn't warp, shrink or expand under a wide range of service operating conditions. This dimensional stability is the result of (1) polystyrene's low rate of moisture absorption, (2) its rigidity, which prevents the distortion that occurs when a plastic product is unable to completely support its own weight, (3) its heat resistance—softening occurs only if it is subjected continuously to temperatures in excess of 150 degrees.

Polystyrene retains its strength at low temperatures at which many other plastics become so brittle as to be unserviceable. Although brittleness is one of polystyrene's limitations, it does not increase at low temperatures. (It would be difficult to find a refrigerator in the country today which does not contain from one to four pounds of polystyrene—as drawer pulls, control knobs, compartment doors, etc.) Being completely clear in its natural state, polystyrene's color range is unlimited. It has high sparkle, and the manufacture of synthetic jewels for costume jewelry and hair ornaments is a market for polystyrene which reaches substantial tonnage proportions.

A high resistance to chemicals and solvents is another important property of polystyrene. This is an important consideration. Combs, for example, must be resistant to hair oils, and not all containers that could be devised for cold

AMOS RUDDOCK

cream are as resistant to the creams' chemical components as is a woman's face.

Polystyrene's electrical properties are almost unique among plastics, and approach those of fused quartz. It is extensively used in radio and high frequency equipment, and is the only thermoplastic approved by Underwriters Laboratory for use in the end plugs of electrical cords.

Limitations. Polystyrene's resistance to shock and impact is not as great as that of some other thermoplastics, but this is offset by the fact that its brittleness does not *increase* at the lower temperatures, where other plastics fail.

Polystyrene is not resistant to certain organic solvents, such as dry cleaning fluids, or to essential oils employed extensively in the manufacture of perfumes, or to gasoline. It should not be selected for applications which call for contact with such materials.

Although it is harder than comparable materials and scratches less easily, the scratches are more apparent, and the buyer should be cautioned wherever this may be a factor.

In general, polystyrene's desirable properties far outweigh its limitations, and these limitations can be largely nullified by designing the product in such a manner as to get around them.

Polystyrene is probably the easiest of all plastics for the layman to identify. When dropped or tapped upon it gives off a metallic ring in contrast to the dull, flat sound characteristic of other materials.

Once we are certain that the product has been made of polystyrene, the plastic's fitness for the application can be determined by checking its characteristics against the service conditions the product must meet.

Consider the case of a clock. It is imperative that a clock case be stable dimensionally—it must not warp, crack, chip, peel or be subject to cold flow. Polystyrene meets all of these conditions—some of them much better than wood does. Beauty is also important, and here polystyrene offers attractive, smooth, gleaming surfaces, plus more extensive color possibilities than are obtainable in metal or wood.

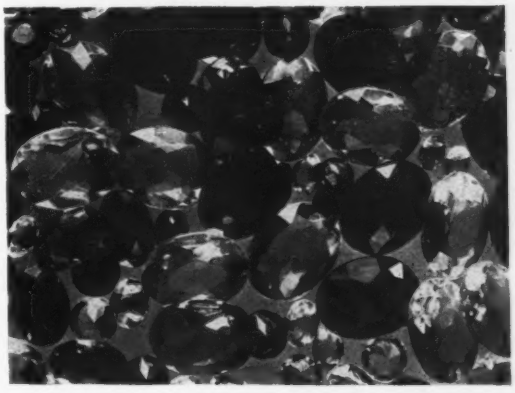
More complex designs are possible than can be achieved with wood; and greater detail in designs than can be achieved at comparable costs with metals. Low cost is a still further advantage.

Now let us see whether the limitations of the material affect its use in this application. Shock resistance of polystyrene is not high, but in this case it is not important, since it is generally conceded to be a good idea not to drop clocks or strike them sharp blows. Clocks perform their function in heat environments within the normal resistance limitations of the materials. No chemicals or solvents to which polystyrene is not resistant are encountered.

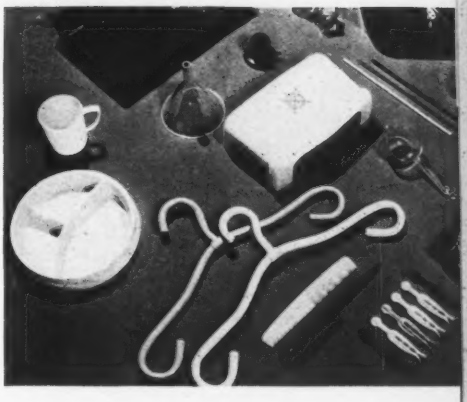
Hence we may conclude that this plastic is excellently suited to clock cases, and has several important advantages over materials which have been previously employed for this purpose.

The technique employed in this illustration can be carried through the entire range of products. Should you encounter an ash tray of polystyrene you would know immediately that the material was not well suited for the purpose, since it will not meet the necessary heat resistance requirements.

Clarity of Styron is shown by molding granules taken through a half inch block.



These jewels molded fr Styron come in blues, re greens and pastel shad



The household items are molded from Styron. The flashlight is Ethocel.

Good Design IN PLASTICS

By Peter Muller-Munk

LET us examine what we mean, we designers, and what anyone should mean, when we say "good design". First, I require, and I think you should require, that all merchandise be designed according to its intended use; the form of a product must be proper for its operation and handling. If its present form has gone through a long history of development with the passage of years, like chinaware, for instance, it is probably well adapted to use. Why somebody should want to make it different I do not understand.

Next it must be made to last in relation to its price.

It must employ the proper materials to achieve good operation and long life.

It must have the right look to be salable and attractive, in terms of what women *buy*, what women *want*, and what they *expect*. It cannot be so traditional that they do not even notice it because it looks as though they have always seen it, and it should not be so different that they will look at it and smile, and then be too scared to buy it.

In order to achieve all of that, we must know something about what *materials* do, what *machines* can do, and what the *objects* can do, and you have to ask yourselves what you really *want* from any given product.

Good design in plastics is the same kind of thing. You must know *why* you want plastics, *when* you want them, and *what* you want them for. You must analyze the function of the product or that bit of the product in which plastics are to play a part. Must it withstand heat, water, fruit juices, light, pressure, or any number of other outside agents? Those specifications can be determined. They are undoubtedly of varying importance, and that also can be determined.

What Must It Do. Recently, in designing a sink faucet, I specified plastics for the faucet handles. Someone poured alcohol over them, and the finish was not quite as beautiful as it was before. But that really does not happen often—you just do not break a gin bottle over your faucet every evening.

We were in the office of my client, and he had some cosmetic preparation around. He said, "Let us see whether they can take this." He put some on the handles and left it there overnight, and the next day they were gray. That did not prove very much, so I said, "Look here, Tom. Why not try soap. Try orange juice. Try things like that." And they took them beautifully.

You, the retailer, must determine the specifications to meet your customer's needs. Write them down wherever you can. In your relations with designers and with manufacturers, you must determine them, because you are the ones who really write the ticket.

How Will It Be Used? After you have determined just what the plastics have to take, then try to determine how they will be used. Is it some object that will be in the kitchen, or will it be in the living-room? Will you lift it? Will you push it? Is is a vacuum cleaner? Is it an iron? Is it a radio?

After you know that, ask yourselves, just what does it have to achieve psychologically? Is it going to be something that should be mainly decorative and satisfy somebody's vanity in the living-room or in the bedroom? Shall it look important? Shall it look pretty? Shall it look delicate? What do you want to achieve with color? Is it just something that you want to attract the customers to the retail counter, and after that how will that color look in the home? And, last of course, what should the cost really be? What is the proper price?

If you could write those requirements down, and give them to a designer, to a molder, or to a plastic company, any one of them would be able, with rather less difficulty than heretofore, to choose the right material.

That so many misuses for plastics still exist is not the fault of the plastics industry as much as it is simply that nobody has inquired very deeply into why this plastic was picked for this particular use.

Let me tell you of a fairly dramatic instance that occurred recently. I designed a kitchen utensil product which was to be ready for market in January. I had not heard about it for a while until one day my client said, "Do you know that item will be out soon? That styrene is certainly wonderful." I said, "What? I thought that product was to be made from melamine." He said, "You know you cannot get melamine." "Sure", I replied, "but that item made from styrene will bend and warp, and you will get more rejections than you have ever had before. My name is not going on that kitchen utensil product unless it is made according to the original specifications."

He finally decided I was serious, so I ended up by saying, "That item is going into the dish pan daily. Let us get some styrene to test. We'll get a dishpan full of hot water and place the styrene in it."

We did that. We had a piece eight inches by six inches which was a quarter-of-an-inch thick, and of course, by the time it had soaked a few hours, it was bent and warped—and that was the end of the styrene.

What was the reason for this error? The manufacturer simply did not sit down and say what are the *musts* that have to be achieved?

I just saw those utensils made from styrene streaming back to my client, and of course, it is always the designer's

fault in the end. The retail store shoves it back to the manufacturer, and the manufacturers say, "Well, that is the fault of the man who designed the thing."

Let us make sure that does not happen where we use plastics. Just write down the absolutely important "musts" that have to be maintained. I do not care what material you use, as long as the material comes up to your specifications.

What Will It Cost? Far too many people think of plastics as the cheap solution, cheaper in dollars and cents, and that is a vast mistake. Material cost should not be the prime consideration. If, when compared with other materials, the less expensive ones perform better at a lower price, they are the right materials. If they do not, the money saving alone should not be the main reason for using them.

There are certainly many cases where plastics are a good deal more expensive. But they may be well worth it if they achieve things that die-casting or aluminum or steel or copper or plywood do not achieve. From the point of view of cost alone, they are certainly not the solution to any design problem or any color problem.

Color Possibilities. To me, as a designer, the tremendously exciting color range of the plastics is one of the identifying marks. It can hardly be equalled by any other group of materials, and it is a marvelous advantage. I am rather afraid that color ranges will get out of hand and become too wide when competition sets in; customers will say, "Oh, red is not enough. I want that *special* red. Here is a little swatch of Junior's suit, and we love it. Match it."

Theoretically and practically that is possible, but somebody has to pay for it. It might be wiser to say, "Is it worth this many cents extra a pound to have that shade of gray? Who really cares?"

It would be helpful to designers and to the plastics industry, if some standardization of colors could be agreed upon. We should get down, let us say, to five standard shades of blue. I could dazzle you if I showed you just the color samples in my office, because, after you look at them for a while, you really cannot recognize one blue from the other, and you wonder if they all are really necessary.

Versatility of Shape. We have all come to accept streamlining as the modern look—the smooth contour, the soft rounded edge, the compound curve. The smooth shape, streamlined, is achieved with greater ease in plastics than in other materials. They can produce much more complicated shapes than are possible with other materials, and that is frequently helpful to a designer.

Plastics' physical properties cover such a tremendous range, that their general versatility is very high, and an article may be made virtually any shape that you want it. Think of the plastics, then, not just as one material but as a great big family of materials, in which you can find somewhere almost anything you are looking for: strength, heat-resistance, weight, light-resistance. But you cannot expect plastics to perform if they are not even given specifications to live up to.

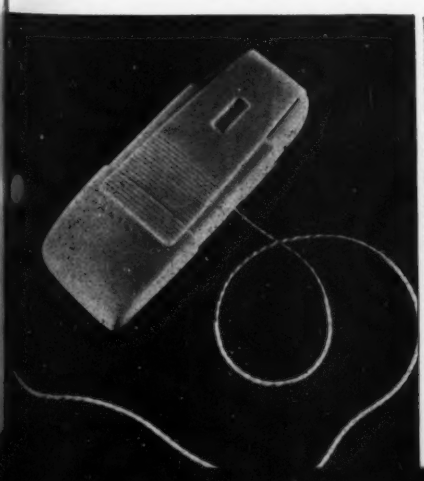
Quantities Important. Whether or not you want plastics and what kind of plastics, and what process you will use to produce them, depends very largely upon the quantities of the product that you want in the end. If you want a thousand of a given item, that quantity will automatically point to a certain type of plastic; if you need 100,000, it will again automatically exclude certain materials and include others.

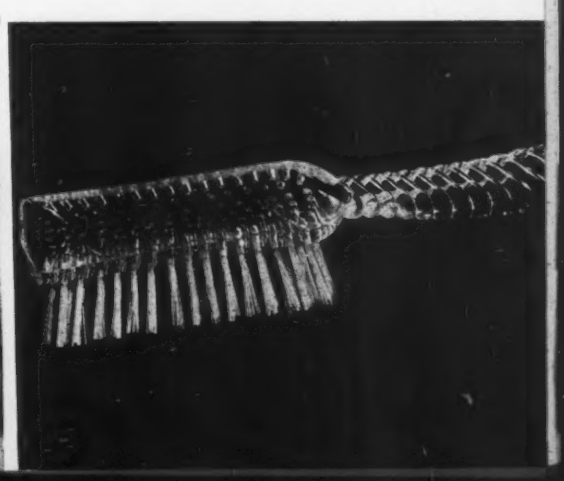
It is very important to know just how many you want, at what price, in what quantity, and in what sequence. You may want all the 50,000 in two weeks, or evenly distributed over six months or ten months; with this information, the molder and the producer will know how to act.

The Retailer Decides. The conference at which the model is shown to a group of buyers is a conference that makes or breaks a newly designed product. When you produce the first model the buyers are called in. If their faces fall, that model is out. There is nothing in the world you can do except re-design it, no matter how well anyone liked it before.

The buyers meet the public every day and they are the ones who are responsible to the customers for obtaining the best possible merchandise. The designer, the materials producer, and the manufacturer, are learning more and more to ask and accept the opinion of the buyer who must be more than a selector of merchandise—he must also aid us in writing specifications for consumer products. Then, and only then, can we be assured of producing a product properly designed, of suitable materials, at a reasonable price, which will provide the customer with the satisfaction in use she can rightly expect.

Three new designs by Peter Muller-Munk making important use of plastics. (1) Hearing aids for E. A. Myers & Sons in melamine featuring the elimination of open grill work over microphone for improved sound; (2) Coffee maker for the Hartford Products Corp. with single attachment plastic handle assembly; (3) New acrylic brush for Pro-phy-lac-tic Brush Co.





PLASTICS IN *Textiles*

By Edgar Schlesinger,
Cohn Hall-Marx Co.

NYLON as a textile fiber has definitely arrived and taken its place with other textile fibers which we use in everyday practice. It can be formulated in many different ways, but the type ordinarily used by us is two or three times as strong as rayon or cellulose acetate and is stronger than cotton.

Nylon absorbs very little moisture and is, therefore, as strong in its wet state as when it is dry. This is very important for washing and cleaning. It also gives us that well-know ability of nylon garments to dry in a matter of minutes instead of hours. Nylon is resistant to all types of bacteria, moths, mildew and common household chemicals. It has sufficient resistance to high heat so that it should offer no problem in ironing.

Nylon has a high strength-to-weight ratio. Therefore, we can make thinner, finer garments than have been possible with weaker fibers.

Technically, one of the greatest advantages of nylon is that it can take a set. The easiest way to explain the term *set* is to tell you the first processes in the dyeing of a nylon stocking. After being knitted, each stocking is put on a form and subjected to steam under pressure of about 15 lbs. at a temperature of about 250° F. This process so fixes the physical form of the stocking that subsequent dyeing and finishing operations or washings by the consumer cannot permanently change its shape. It is rather obvious that this faculty will give us stability in garments of all kinds made of nylon, if the fabric has been properly set. By stability I mean, that it will resist shrinkage or stretch.

Filmy chiffon gown of nylon topped by a headdress of nylon bristles.

I would guess that nylon garments cost the consumer approximately 30 per cent more than the same garments made in other synthetics. In my opinion this 30 per cent is not an excessive price to pay for the wearing quality and other advantages which nylon offers.

Vinyon. We draw nearer to a true plastic yarn in discussing Vinyon. This is a joint product of Carbide & Carbon Chemical Co., the producers of the resin and the American Viscose Corp., the producers of the yarn itself. Vinyon is a multifilament pliable yarn, with satisfactory strength and excellent resistance to ageing, to sunlight and to all types of chemicals. Most of the plastic yarns offered for consumption to the weaving trade have been in the form of monofilaments. Usually these are rather thick, and because there is only one filament in place of many and because of the thickness, these tend to be wiry and stiff rather than soft and pliable. Vinyon, while of true plastic origin, does not have this drawback.

Vinyon absorbs little or no moisture. This gives it a high wet strength as compared to its dry strength, and helps to make it dimensionally stable so that it will not stretch or shrink readily. However, it has proven to be an obstacle in getting color onto fabric. This will undoubtedly be overcome, but it must be reckoned with for the moment. Vinyon starts to fuse at the low temperature of 180° F. I understand on good authority that this will be corrected shortly, but meanwhile it is not logical to make apparel of this yarn, because it would fuse under even a cool iron. Vinyon is more expensive than most synthetic fibers, but is well worth the extra cost where its particular qualities are needed.

Saran. Saran is a product of the Dow Chemical Co. Technically Saran is a polyvinylidene chloride. A very large percentage of the production of this material has been passed on to the weavers in the form of monofilament yarn which I mentioned before. Such a structure is produced by forcing a viscose mass through a nozzle or orifice to produce a round, solid filament. During the war this found an excellent application in the manufacture of screening cloth. This was used not only for insect protection, but was also cut into inner soles for jungle boots. Saran absorbs no water to speak of, and is impervious to chemicals, moths, perspiration, mildew, salt water and all the other forces of nature which deteriorate most other textile yarns. Saran screening is being sold in large volume for civilian consumption. In addition, these same characteristics make it highly desirable for furniture and upholstery. Such fabrics will withstand extremely hard wear, do not soil easily and can be very easily cleaned. They are well suited for use in all forms of public transportation and for seats in all public places.

Thus far, due to its wiry nature, Saran has not been adopted for real apparel use. As in the case of Vinyon and other plastic yarns, it has been put to good use in millinery, handbags, shoes and other accessories.

It is natural for you to wonder why Saran has not been produced in multifilament form as is the case of Vinyon. Work has been done along these lines and experimental quantities of very beautiful fabrics have been produced. Using the proper proportions of Saran, we can get wrinkle resistance, fire resistance, stain and mildew resistance. I

cannot even guess at the cost of this fabric.

Outside of the wiriness of the monofilament Saran, its only disadvantage is the difficulty of putting color on it. This seems to be a common disadvantage of all the true plastic yarns developed to date. It is overcome by incorporating pigment in the material from which the yarn is made so that it is a part of the final product.

Plexon. Plexon is produced by coating various standard yarns such as rayon, cotton, nylon, fiberglass, etc., with various formulations of plastic. We, therefore, see a standard multifilament being made into a monofilament. By the variation of the core, the amount of plastic used and the type of plastic used and the type of plastic formulation, almost any effect can be achieved. By varying the core of the yarn, we get different flexibility and we get different strength. By varying the coatings, we get chemical resistance, fire resistance, moisture resistance and a host of other characteristics that we look for at various times.

In addition, Plexon can be made in various finishes and effects. Plexon may be had translucent or opaque, bright or dull, in various thicknesses from exceedingly fine coated yarns to heavy cords. The concept is economical because it is not necessary to spend money for ingredients that are not required in the end product whereas completely plastic yarns do not have this flexibility. Due to the ability of the manufacturer to tailor Plexon to requirements, it might be possible to make actual apparel fabrics from it when very strong yarns of fine diameters such as 15 denier monofilament nylon and the like are freely available. At the moment it is too coarse to have apparel use.

Aluminum Yarn. Another cousin in the family, related on one side only, is aluminum yarn. The original experiments with aluminum as a yarn proved that it would be too brittle to run efficiently on textile machinery. Therefore, the aluminum is laminated between two sheets of cellulose acetate, which is a plastic, and then slit into narrow ribbons which approximate yarn. This gives the yarn some strength, some elasticity, and provides a coating which prevents tarnishing and resists soiling.

There is still a great deal to be learned about the handling of this yarn in weaving and even in dyeing. We believe that it will be worth the effort to overcome the various problems as they arise because we finally have a metal yarn which eliminates a large part of the inventory headache usually associated with tinsel.

Resin Finshes

I will venture a guess that the poundage of plastics used for finishing tremendously exceeds the poundage of plastics used for yarn. This type of plastic is commonly called resin. It is sometimes used merely as a finish to add weight to create stiffness or crispness. In addition, it is the only means of producing a crush resistant finish on fabric. I differentiate between finishes for hand only and finishes to produce crush resistance because of the basic differences in the methods of application. Producing hand only is a simple matter of a solution of emulsion. Producing a crush resistant finish is more complicated. I always like to think of this latter as comparable to filling a glass with water and then freezing it so that the glass is filled with ice instead of fluid. The resin is forced into the fibers and then baked in at terrific heat to produce substantially this result. Therefore, instead of a fiber which is very pliable and dents easily, we have a rod-like structure which resists deformation, and if it is deformed, tends to find its way back to its original form. Another use of resin is for glazing, such as the now familiar permanent glazed chintz. In this case the resin is used on the surface, almost like a wax, but when it is heat treated it sets permanently to make a durable surface.

In the last couple of years resins and resin techniques have been developed to produce dimensional stability in fabrics. A synthetic fabric that would ordinarily shrink from five to 10 per cent can be controlled to one, two or three per cent residual shrinkage in washing, and practically no shrinkage in dry cleaning. A lot depends on the fabric itself. Its yarn content or construction may make it impossible to produce the best result, but so much work is being done on this problem that we can hope for good over-all coverage in the next couple of years.

Lately, the same tactics have been applied to wool and worsted fabrics. On some constructions, the resin works so well that the shrinkage is actually down to one or two per cent in repeated washings. Other constructions do not respond so well.

Resins are also used to produce water repellency. The best known durable water repellents do not yet contain resin, and I cannot safely say how large plastics will bulk in water repellency in the future. You must remember that I am speaking of water repellency, which leaves the cloth porous, as opposed to water proofing which is a continuous non-porous coating.

Non-Woven Fabrics

There is one more application of resins to textiles which is liable to become increasingly important. Several large companies have started to manufacture what we call non-woven fabrics. These are made by taking multiple layers of these webs of fiber, before they are even spun into yarn, and literally pasting them together. The result is a felt which can be rather soft and fluffy, or can be flattened out to approach the feel of paper. Plastics are used for the bonding of these fibers to each other and the bonding of the webs layer by layer. Obviously, such a material would always be cheaper than a woven textile, on the basis of weight, because the spinning and weaving operations are eliminated.

I doubt if they will soon be available for sale as yard goods, or whether it would be wise to merchandise them in this way.

Firestone's Velon was introduced to fashion in this brocade gown.

PLASTICS IN THE *Home*

By William A. Lang,
Plastics Division, Monsanto Chemical Co.

WILLIAM A. LANG

FIRST let's look at plastics in the structure of the house itself. The plastic house has replaced the plastic automobile in the headlines and it is just as far from being a reality. Housing construction persists in being largely conventional in nature and the house itself is still an on-the-spot assembly job of thousands of small components. Plastics have made a few fundamental contributions in the form of adhesives which simplify the assembly problem by making it possible to prefabricate or pre-assemble some portion of the structure. The use of large plywood sheets to form a single wall panel is already standard practice in many sections of the country and has found its widest use on the West Coast.

The secret of structural plywood lies in phenolic, melamine and urea resin glues which provide a bond stronger than the wood iself and impervious to deterioration from weather or insect infestation.

Plastic bonding resins have also greatly increased the durability and efficiency of glass fibre insulating materials by making possible the production of rigid or semi-rigid space filling materials which have high insulation value and which will stay put in the area they are intended to fill. These are the two major present day uses of plastics in home construction. They are just inklings of what may be possible in the future.

In the field of electric wiring in the home, the vinyl plastics are now being extensively used to produce safer wiring less bulky and potentially less expensive than types we have known in the past. Vinyl resins provide a wire insulation material which is non-flammable, has high insulation efficiency, and can be produced in any desired color which makes coding or identification of the various wiring circuits extremely simple. A continuous conduit molded from phenolic resins will give you electrical outlets every few feet all around a room. The old-fashion switch box is rapidly giving way to a modern circuit breaker housed in phenolic plastic. The same material is used for wall switch plates, switch assemblies, lighting sockets and plugs, as are urea resins and to some extent some of the newer thermoplastics such as polystyrene.

The household refrigerator of today makes use of from one to five pounds of plastic materials and the proportion will be even greater in the year's production. Thermoplastic materials, particularly polystyrene, are used extensively for the freezer compartment, door fronts, for the fronts of the various drawers and shelves, and even for the drip tray. This plastic is impervious to acids and alkalies such as might be encountered either in the storage of food, or in the cleaning and sterilization of refrigerator interiors. It is good thermal insulating material and adds efficiency to the operation of the refrigerator. Almost equally important is the attractive appearance that the brightly colored or crystal transparent parts lend to the interiors of the refrigerator.

No refrigerator is any more efficient than the effectiveness of the door seal. The breaker strips where the door meets the walls of the box itself are almost universally produced from a phenolic resin laminate. On some of the newer models this breaker strip is made from extruded or molded polystyrene.

Finally, the gleaming white mar-proof finish on the refrigerator is itself a tribute to plastics since the base of these new finishes are usually mixtures of alkide and melamine resins.

We find the same finish on stoves, and here again we encounter intelligent use of the high thermal insulation value of plastics. Control knobs and handles which must remain cool to the touch are molded from phenolic or

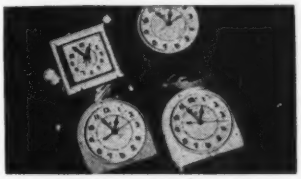
Cabinet and table tops of Formica, a laminated plastic surface produced by the Formica Insulation Co.

THERE ARE THREE TYPES OF PLASKON PLASTIC MATERIALS

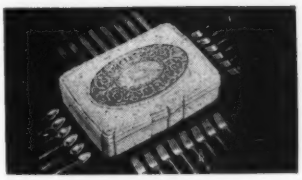
now used in the manufacture of retail goods

PLASKON MATERIALS now are widely used for the fabrication of plastic products sold to the general public.

These materials offer manufacturing and sales advantages which can induce profits for you in many ways. Learn these advantages to help you do a more effective merchandising job, on retail items in which Plaskon Materials have been used for the molding of parts, complete units, or finished product assembly.

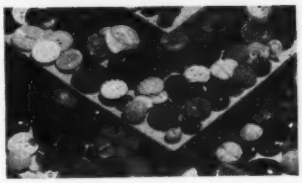


Plaskon Molded Color permits endless variety in the color and design of cases for all types of clocks.

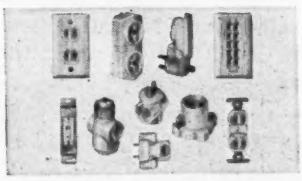


Plaskon Molded Color is widely used for attractive containers to display silverware, jewelry, drugs and cosmetics, and many other retail items.

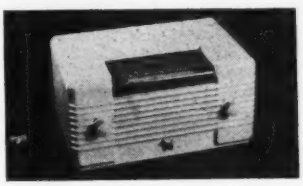
Plaskon Resin Glue is used in large quantities by leading manufacturers of furniture, pianos, musical instruments and other wood products.



Millions and millions of Plaskon Molded Color buttons are used each year, for service and garment enhancement. Strength, attractive colors, moldability for every design requirement, and resistance to heavy laundering and ironing are Plaskon features.



Plaskon Molded Color has high insulating value, and is used for almost every type of household electrical application.



Plaskon Molded Color makes possible a great range of distinctive designs and sparkling hues in radio cabinet manufacture.

1 PLASKON UREA-FORMALDEHYDE COMPOUND

1. Wide range of lightfast hues, from translucent natural and pure white to jet black.
2. Smooth surface, eye-catching, warm to touch.
3. Completely resistant to common organic solvents, impervious to oils and grease.
4. Possesses extremely high flexural, impact and tensile strength.
5. Highly resistant to arcing and tracking under high voltages and high frequencies.

2 PLASKON MELAMINE COMPOUND

1. Assures ample protection where water or high humidity prevent the use of urea compounds.
2. Exceptional resistance to acids and alkalies. Non-porous, non-corrodible.
3. Under extreme conditions of heat and humidity, is non-tracking, highly resistant to arcing, and has high dielectric strength.
4. Highest heat resistance of all light-colored plastics.

3 PLASKON RESIN GLUE

1. Materials bonded by Plaskon Resin Glue cannot be separated at glue line—the material fails first.
2. Plaskon* glue line is highly moisture-resistant, cannot be weakened by mold or fungi.
3. Maintains its tenacious grip in heavy-duty service for years.

*Reg. U. S. Pat. Off.

PLASKON DIVISION • LIBBEY • OWENS • FORD GLASS CO.
2102 Sylvan Avenue • Toledo 6, Ohio
Canadian Agent: Canadian Industries, Ltd. Montreal, Que.

PLASKON
TRADE MARK REGISTERED
★ MATERIALS ★

The case of this Emerson radio is molded of Resinox and the curved dial plate and station indicator are molded of Lustron, both Monsanto products. Grill is fabricated of pierced metal.

urea molding compounds in colors either matched or smartly contrasted with the stove itself.

The washing machine, if it is of the agitator type has an agitator molded of phenolic or melamine plastics. The plastic has been selected for this use rather than metal because it alone is sufficiently resistant to the chemical attack of caustic washing compounds, and it cannot develop sharp edges or abraded surfaces to damage clothes.

The radio or television set, depending on is size and type, may have a handsome and efficient case molded of phenolic resin plastic. If it is one of the small table models the cabinet may be of phenolic, urea or a thermoplastic material much as polystyrene or ethyl cellulose. In any case these plastics permit a much wider latitude of design influence, and an unlimited range of colors, However, the important contribution of plastics to the entire electronics field is in the electrical circuits themselves. Here are truly functional uses since plastics alone have the range of insulating values to protect the efficient power circuits for both radio and television equipment. Without plastics the mass production of either would be an impossibility.

The bathroom is another spot where plastics are finding increasing use. Toilet seats, for example, are produced in three ways: First, a hardwood core covered with a layer of thin plastic in sheet form, either cellulose acetate or cellulose nitrate. Second, a smaller wood core over which is molded a heavy layer of white or colored cellulose plastic. The newest trend is the production of an all-plastic seat, molded of polystyrene. Bathroom hampers and linen storage chests also make extensive use of plastic over wood.

Tub and shower fixtures are now being molded of polystyrene making effective use of this plastic's unlimited color range as well as its dimensional stability and resistance to corrosion.

Vacuum cleaners are another fine example of intelligent use of plastics. Here is the only major utility in the home which a woman must carry or push from place to place. Light weight is important and plastics have a great advantage over even the lightest of metals. On some models almost the entire housing is of molded phenolic plastic. The conventional sweeper type or the tank type both use cleaning attachments of molded phenolic or thermoplastic materials. Here weight saving is coupled with another advantage of plastics. These attachments have no sharp edges and are not in themselves sufficiently abrasive to scratch or mar furniture and woodwork.

Elastomeric plastic films, usually of the vinyl family are providing a revelation to home-makers. These materials are light, strong, waterproof, stainproof and still as versatile as any textile in the scope of their design and color interest. From vinyl films we have shower curtains which do not mildew, don't crack and don't discolor. There are kitchen curtains which always stay fresh and new looking and can be cleaned with a damp cloth. The use of these materials for protection in the home ranges from food covers in the refrigerator to garment bags, pillow and mattress covers and even slip covers and table covers.

These same vinyl plastics, particularly the group known as vinyl butyral, are being used extensively as coatings on textile fabrics to give a wide range of new materials to the American home maker. These coatings range from thin, almost invisible, deposits on decorative fabrics to heavy leather-like materials. In the field of this transparent coatings, such items are being produced as tablecloths which can hardly be distinguished from fine untreated linen—yet they are stainproof and may be used from six to eight weeks without laundering. These coatings are also applicable to drapery and upholstery fabrics and at least one manufacturer is producing washable wallpaper protected in this way.

The heavy coatings are providing new chair coverings which will outlast either leather or the previous type of coated fabrics. Rolled into thicker sheets, we find vinyl plastic making a more durable and more decorative floor covering, which has as good or better abrasion resistance than either rubber or asphalt tile, and in addition possesses some superior chemical and oil resistance properties.

Types of Plastics

(*Continued from page* 34)

Chemical Properties

Water absorption, which I have already referred to, is a chemical property. We have discussed the fact that some of these pure resins absorb very little water, and the fact that when there is cellulose material present it tends to increase water absorption.

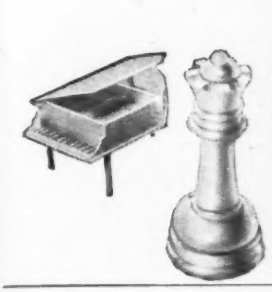
A surprising thing is that glass laminates, which you would expect to be relatively resistant to water absorption, tend to lose strength fairly rapidly under high humidity. Although glass as we make it in the form of tumblers is very resistant to water, the actual material going into it is rather hygroscopic, and when it is reduced to the fine form you have in a fabric, with plenty of surface involved, the material will absorb water. That interferes with the bond of the resin to the glass fabric and strength is lost.

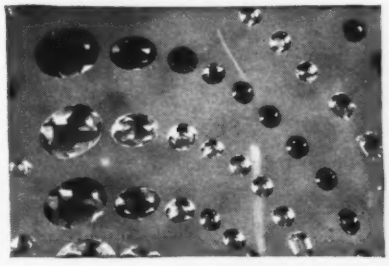
Resistance to chemicals is very important for many retail goods. When chemicals present in lipsticks, nail lacquers, nail removers, etc., come in contact with some of these plastic materials they will scar the surface or mar it or take off the finish. We have to use a great deal of care in selecting a plastic material for that use.

Some plastic handbags have contained plasticizers which tended, in contact with a varnished surface, to mar it. That's the type of thing which will have to be considered in preparing consumer specifications and in proper labeling of plastic products.

STYRON THE RIGHT PLASTIC

Here's a quick look at the outstanding qualities that make Styron the Number One Plastic today for sales appeal—for performance—for customer satisfaction. In your store, this great Dow material speaks for itself—in qualities your customers understand. And Styron fulfills its over-the-counter promise! Better consumer items of many kinds—from toys and ornaments to utensils and appliances—are gaining new beauty, new popularity, new value . . . with Styron!



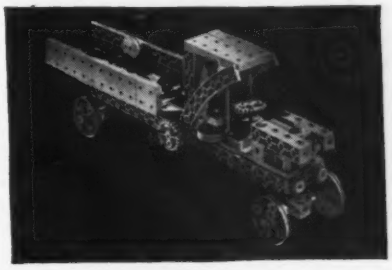


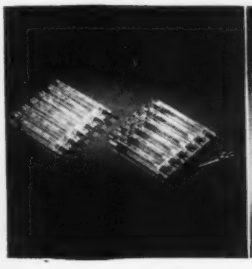
RIGHT FOR rich appearance!

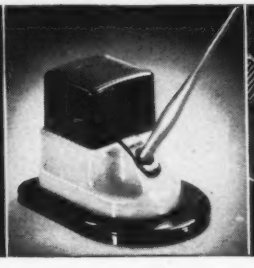
Costume jewels of sparkling Styron look surprisingly like precious stones, with the appeal of brilliance and depth of color. There's a quality appearance about these fine Styron chessmen, and novelty items like this piano cigarette box have a luxury look far beyond their modest cost.

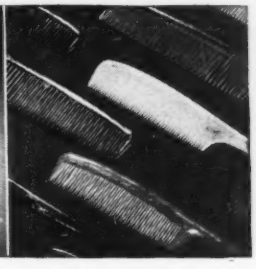
RIGHT FOR exciting newness!

Styron toys, like this construction set, offer novelty appeal plus new design and eye-catching color. The salad set, another intriguing design achievement, makes excellent use of Styron's bright finish and decorative colors.



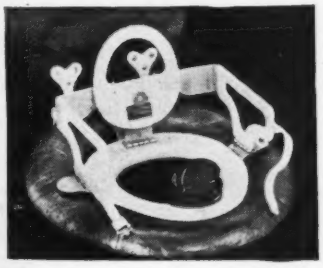






RIGHT FOR dependability!

Styron is *durable!* That's why people like these strong, rigid combs. They give lasting service—and they don't stain or discolor. The Styron pen-and-inkwell set is a substantial item for long and dependable usefulness. It keeps its shape, won't warp or shrink. The transparent hypodermic needle card is molded of rigid Styron for maximum protection.



RIGHT FOR practicality!

Gleaming Styron bathroom fixtures are so easy to keep clean! Soap and water won't hurt them—nor will they chip, check, warp, or discolor. The baby trainer seat is another outstanding illustration of Styron's sanitary qualities.

ASK YOUR JOBBER OR WRITE DIRECT!

DOW Plastics

STYRON · SARAN · SARAN FILM
ETHOCEL · ETHOCEL SHEETING

PLASTICS DIVISION • THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago
St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Ontario

50th Anniversary 1897-1947

"Pause for Cabinet Identification . . . This is *Catalin*, the Gem of Plastics"

Hourly, Radio stations pause to identify their call letters—not that they deem this repetition necessary for their tuned-in audience . . . but to direct and welcome the incoming listener.

In like manner we pause proudly to identify as Catalin, the exquisite two-toned beauty of the new **Bendix** Radio cabinet pictured here.

Those who manufacture and market the finer radios know Catalin—and also recognize that of all housing materials, Catalin stands supreme

Catalin's ability to glorify one's blueprints into finished plastic form, serves to constantly inspire designers to greater and greater effort. Its speedier availability, without recourse to expensive tooling, appeals to those responsible for expediting production schedules.

Catalin colors and brilliance, rich beyond description, win preference with dealers . . . are accorded choicest display space . . . and find as their final sustaining reward, a most enthusiastic reception in the home.

So true is this of all products made of *the gem of plastics,* that we at Catalin would like to assist you in the thinking out and planning of your ideas — Inquiries invited.

CATALIN CORPORATION OF AMERICA
ONE PARK AVENUE, NEW YORK 16, N. Y.

CAST RESINS • LIQUID RESINS • MOLDING COMPOUNDS

UNFINISHED SELLING

Would you walk away from a customer in the middle of a sale? Same thing, exactly, says Mr. Perine, when you fail to capitalize locally on national advertising.

By H. Ford Perine,
Merchandising Director, LIFE

H. FORD PERINE

YOU wouldn't think much of a Hollywood producer who threw a lot of national advertising behind a luscious blonde in a picture called (let's say) "Beat Me Daddy Eight to the Bar," and then said to all the movie houses showing the picture:

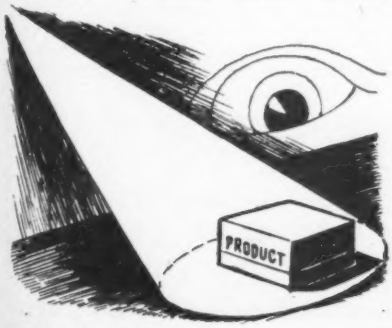
"Don't put a sign out in front—let the customer *guess* where to see it."

You'd think it was pretty silly if a guy selling shoes just painted "store" on his window, and let people *guess* what was for sale inside.

And you'd think that any retailer was slightly baffling if he ran a full page advertisement in the local newspaper, and left his store name completely out of the ad.

By the same token, without a complete follow-through program on national advertising, customers will have to do the *same kind of guessing*. That is the important assignment we all face today—not to waste advertising impressions by *unfinished selling*.

I'd like to discuss the kind of merchandising follow-through that is a "must" in tomorrow's competitive selling days. It is a "must" if we are to profitably distribute more wanted goods to more people, at better prices to the consumer. And it can only be accomplished if the Big Three of Distribution, which have been preoccupied with their separate problems, band together and follow through to make their mutual selling efforts more complete. By the Big Three I mean: (1) the manufacturer (or the national advertiser), (2) the advertising media, and (3) the retailer.



Merchandising as a word has a vagueness of meaning about it for most people. You advertise a product. Everybody knows what that means. You sell or buy a product. No misunderstanding about what that means. But merchandising deserves to be equally well understood.

Today merchandising means—simply—the activities that keep a product in the spotlight, all the way from the factory, through the advertising medium, to the place it is purchased. Those activities, if properly carried out, move a product through the courses of distribution *quickly* by moving it *attractively*—and in such an exciting way that the ultimate consumer wants it and purchases it.

As applied to a manufacturer's product, "merchandising" may cover broadly all activities involved in promoting sales. The *merchandising of advertising* involves activities which are strictly neither advertising nor selling, but are aimed at making both these forms of selling *completely effective*.

Merchandising of advertising is the act of setting up a complete follow-through program, starting at the national advertising page and continuing directly to the point of sale. I mean the kind of follow-through that helps retailers take full advantage of advertising messages that reach their customers through advertising media. I mean the kind of follow-through and reminders that we call display cards, special window promotions, "Advertised in" stickers or tags on merchandise. And I mean, too, reminders to Mrs. Consumer in the retailer's local newspaper advertising that announce, "*My* store is the place to buy that lush perfume you saw advertised in last week's so and so." When these simple steps are taken, the selling job started by national advertising is made locally effective—the sale is traceable, it's consummated at the retailer's counter.

Today's smart retailer sees hundreds of dollars rolling down the street in front of his store—rolling in his street because national advertising has set those dollars, or sales impressions, in motion by preselling his local customers. Through the use of displays that tie in with that national advertising, the retailer sets up a funnel in front of his store that literally says, "Don't look any further—here is the place that has the brand you are looking for."

Letting customers know that you carry well-known, well-accepted merchandise is plain common sense. Smart dealers today know that when they fail to capitalize locally on the advertising impressions showered on their

communities, they are missing a lot of sales. They know that the application of merchandising principles is sound practice. You can't rely on the memory of a customer. A good display of the brand name is simple Step One. And powerful Step Two is identifying national advertising media in which the brand has been seen! . .

As their contribution to the kind of advertising follow-through I am talking about, some advertisers have supplied dealers with such devices as display cards reprinting advertisements, folders outlining their campaigns in advance, and direct mail pieces. As their contribution, media have made follow-through materials available to advertisers and retailers.

Retailers in all fields are showing more and more ingenuity in their follow-through on national advertising. They are building displays around "Advertised in—" posters, around magazine covers, and around ads torn from their own magazine copies. And they are building displays around mounted reprints of advertisements, when those are made available by advertisers.

But we must bring these efforts together. And we still have a long way to go to make these three parts of the distribution system work together effectively and profitably as never before.

In getting maximum local use out of national advertising, it seems to me that there is a responsibility for each member of the Big Three of Distribution.

First: A responsibility for Advertisers:—The Advertiser, as I see it, should provide the *right* kind of merchandising material for dealers—display pieces, advertising suggestions, mats and radio scripts for local use. He should get the most out of his advertising campaign by taking every benefit from his media's standing with retailers. He should keep the dealer and the dealer's salespeople informed about his product, and his advertising. He should coordinate his efforts with his media. And should coordinate with his media. And he should coordinate his efforts with retailers, taking into consideration such things as store timing, store policies, and particular local selling problems.

Second: A responsibility for Media: The Medium should be one of the chief catalysts between the national advertiser and the retailer. It should provide the stage for a complete selling show. It should keep retailers informed about its local selling power. Most important, it should keep its advertising medium exciting enough to be a good selling background for advertisers.

Third: A responsibility for Retailers: I think the answer is to make everyone in your store more alert to national advertising that is being run for their own local sales benefit. Have salespeople mention national advertising in their personal selling. Use the display material furnished you by advertisers, when it is right. When it's wrong, tell the advertiser why—Tie in with national advertising in your windows.

Make it absolutely unnecessary for Mrs. Smith to go from store to store vainly searching for the Tiny Toes children's shoes she read about. When Momma has underwear for Poppa on her shopping list, catch her attention immediately with a display of Poppa's favorite brand. Your customers are constantly making mental notes from national advertising on products they want. Turn those notes into sales by using advertisement reprints as reminders in window and interior displays, by featuring the product with the magazine name as a reminder in your local radio spots and newspaper advertising.

Put your products in the proper setting. Manufacturers have already done that, with their attractive packaging and with their colorful, informative advertising. Search your operation to make sure that there is no *unfinished selling* that wastes the impulses that are set up by national advertising, which is *local* advertising in your community.

Tomorrow's products of America still promise to be the best ever. Magazines, radio, newspapers are researching, finding new methods to be better advertising media than ever before. Retailers have become smarter merchants, have plans to be supersalesmen in the future, with fresh ideas for improving their stores, their personnel, their buying and selling know-how. This *Big Three* group must work *together* to pass along to customers the new kind of products that makes for a high standard of modern living—the thing this country always wants to be famous for.

Next time you are scanning the retail advertisements in your newspaper, look at them, perhaps, a different way. Notice the pay-off point in your own advertising. You'll probably find it at top or at the bottom. It's your store signature, of course. The ad's purpose is to attract customer attention to products—yes. But its all-important purpose is to tell those customers *where* they can buy the products.

And that's the pay-off on national advertising too—labeling it locally with your store name—letting people know where to buy the products they have read about at home.

Cooperation among the Big Three —Advertiser, Media and Retailer—is needed more than ever before, to cut down "unfinished selling" of nationally advertised brands.

Probably nobody knows more about this matter of follow-up on national advertising than LIFE'S merchandising director. During 1946 department stores put on 19 store-wide promotions tied in with the magazine with 21 like promotions listed for 1947.

PRESTIGE

is a Prize Salesman for Mohawk Carpets

THE kind of prestige we mean is a positive quality—a vital selling force that really moves goods! It's the prestige that results from the unique advantages that Mohawk can offer. Below you'll find just a few of the *prestige factors* that make Mohawk rate so high with consumers.

Quality at a Price

Mohawk can offer your customers fine carpets in every price range—because Mohawk has one of the country's largest, best equipped carpet mills.

Variety for Every Taste

Mohawk is the only carpet mill equipped to supply all types of weaves—Velvet, Axminster, Wilton, or Chenille.

Beauty That Wears Well

For Mohawk-quality Carpets, Mohawk uses only *Resilient* wools—sturdy, selected wools carefully blended for maximum endurance plus maximum good looks.

Carpet Craftsmanship FROM THE LOOMS OF Mohawk

MOHAWK'S *Selected* DISTRIBUTORS

Allison-Erwin Company
Charlotte, N. C.
Goldsboro, N. C.
Greenville, S. C.
High Point, S. C.

Buhl Sons Company
Detroit, Mich.
Grand Rapids, Mich.
Toledo, Ohio

Butler Brothers
Chicago, Ill.
Minneapolis, Minn.
Philadelphia, Penn.
St. Louis, Mo.
San Francisco, Calif.

Columbia Distributing Co.
Allentown, Penn.
Binghamton, N.Y.
Harrisburg, Penn.

Columbia Distributing Co.
Reading, Penn.
Scranton, Penn.

Crockett & Buss, Inc.
New York City, N.Y.

Glabman Brothers, Inc.
Chicago, Ill.

Guthrie-Morris-Campbell Co.
Charleston, W. Va.
Parkersburg, W. Va.

J. J. Haines & Company
Atlanta, Ga.
Baltimore, Md.
Chattanooga, Tenn.
Knoxville, Tenn.
Norfolk, Va.
Richmond, Va.

Lack Carpet Co. Inc.
New York City, N.Y.

Lott & Geckler, Inc.
Buffalo, N.Y.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Detroit, Mich.
Erie, Penn.

Murray B. Marsh Co. Inc.
Los Angeles, Calif.
Portland, Ore.
Salt Lake City, Utah
Seattle, Wash.
Spokane, Wash.

Momsen-Dunnegan-Ryan Co.
El Paso, Tex.
Phoenix, Ariz.

Neidhoefer & Company
Chicago, Ill.
Milwaukee, Wis.

Orchard & Wilhelm
Denver, Colo.
Kansas City, Mo.
Omaha, Neb.

Peaslee-Gaulbert Corp.
Dallas, Tex.
Houston, Tex.
Jacksonville, Fla.
Louisville, Ky.
Memphis, Tenn.
Miami, Fla.
Nashville, Tenn.
New Orleans, La.
Oklahoma City, Okla.
San Antonio, Tex.
Tampa, Fla.

Prescott & Company
Boston, Mass.

Rumsey Distributors, Inc.
Albany, N.Y.
Hartford, Conn.
Rochester, N.Y.
Syracuse, N.Y.
Utica, N.Y.

Schmitt & Henry Mfg. Co.
Des Moines, Iowa

Small & Scholosky Company
Evansville, Ind.
Indianapolis, Ind.

George Wehn & Company
Pittsburgh, Penn.

MOHAWK CARPET MILLS, INC.

AMSTERDAM, NEW YORK

"The Mill with the Retail Viewpoint"

The Month in Retailing

(*Continued from page* 11)

CHARLES W. DORN

Flammable Fabrics Bill. Proposed legislation against the sale of dangerously flammable fabrics reached the stage of hearings before the House Interstate Commerce Committee on March 5. Three bills are under consideration, among them the Arnold-Capehart Bill (H. R. 1111) which the NRDGA sponsors.

The need for legislation, and legislation on a federal rather than a state basis, seems obvious. However, all of the bills were opposed by representatives of the National Cotton Council and the Textile Fabrics Association. They argued that this attempt to end a dangerous hazard to human life was "premature," that the application of flame-retardants to dangerous fabrics would be too expensive, and that flame-retardant preparations are not sufficiently available. Their opposition appeared to be ineffective.

Authors of the NRDGA legislation pointed out that their bill has been two years in preparation, and that the work has involved the setting up of standards and of testing equipment; that dangerous fabrics constitute about one and one-half per cent of total production; that two flame-retardant processes are already available and four more are in final stages of development.

The Arnold Bill (1) prohibits the introduction into commerce of articles of wearing apparel that are so highly flammable as to be dangerous when worn, (2) prohibits the introduction into commerce of articles of personal adornment that are likewise highly flammable, and (3) provides for the legible marking of *piece goods* which do not pass the tests set up in the act, so that the customer will be warned against using the fabric for wearing apparel.

Appearing in support of the NRDGA-sponsored legislation were the men who started this work two years ago and who have painstakingly developed the standards and testing methods required: Charles W. Dorn, J. C. Penney Co., Chairman of the NRDGA Technical Committee, Dr. Frederic Bonnet, and Dr. H. E. Hager, of the American Association of Textile Chemists and Colorists. David R. Craig, director of research of the A. R. F., also offered testimony in favor of the bill.

Alternative proposals before the Committee are the Johnson and Canfield Bills, both of which would prevent the sale of all flammable textiles, without distinction between apparel and other uses.

A few days after the Committee hearings, the National Bureau of Standards began circulating for trade approval the final revision of its Recommended Commercial Standard TS-4350 on flammability of textiles. This is based on the work of NRDGA's Technical Committee and the American Association of Textile Chemists and Colorists.

Merchandising Division Program. Retailing is making heavy demands on its buyers this year. To do their job creditably they must be masters of skills and systems that were scarcely mentioned during the five years after Pearl

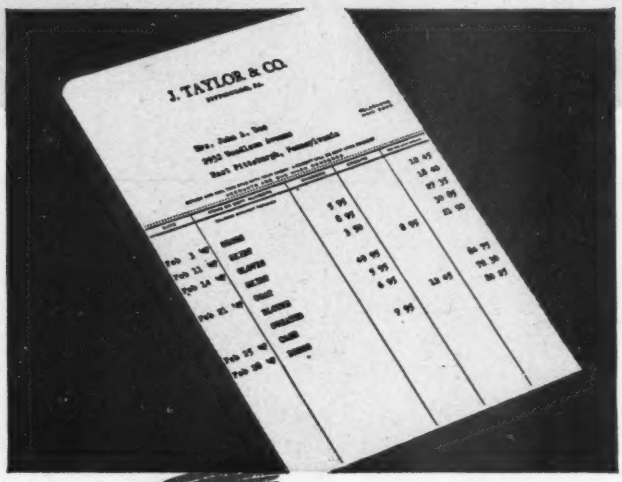
(*Continued on page* 68)

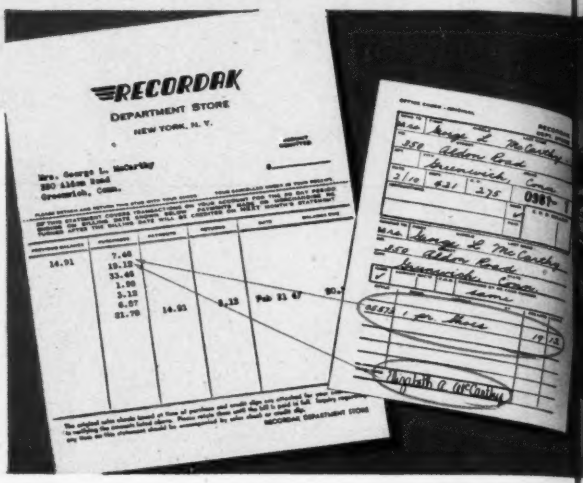
The House Interstate Commerce Committee watches a demonstration of flammability testing machine making guinea pigs of popular fabrics. The machine was developed by the American Association of Textile Chemists and Colorists and produced by the U. S. Testing Co.

The Simtex Family Gives a One-Name Show!
Look for the SIMTEX name on:
Introducing The
Simtex
FAMILY OF PRODUCTS
to Your Customers in
GOOD HOUSEKEEPING
BETTER HOMES & GARDENS
HOUSEHOLD
This full page advertisement in four colors appears in the April issue of BETTER HOMES & GARDENS and the May issues of HOUSEHOLD and GOOD HOUSEKEEPING.
look for the
SIMTEX
name on:
TABLECLOTHS AND NAPKINS
BEDSPREADS
FLANNELETTE SPORT AND WORK SHIRTS
FLANNELETTE NIGHTWEAR
MATTRESS TICKINGS
FURNITURE AND DECORATIVE FABRICS
SIMTEX MILLS—Division of Simmons Company—New York 13, N. Y.

YOU SAVE WORK FOR BILLERS. With Recordak Salescheck Billing, clerks don't describe each posting (no need to when sales checks are returned with the statements). And—spared this time-consuming job—billers can get statements out on time.

YOU SAVE ON OVERHEAD. Because the production load is so much lighter with Recordak Salescheck Billing, each clerk can handle many more bills per month. And stores no longer use anywhere near as many machines . . . nor as much stationery.





5 ways you save ... with Recordak

YOU SAVE YOURSELF WORRY over the possible loss or destruction of your accounts receivable records. Once microfilmed with Recordak . . . they can be stored in vaults beyond the reach of fire and flood. And the film record can't be tampered with or altered without detection.

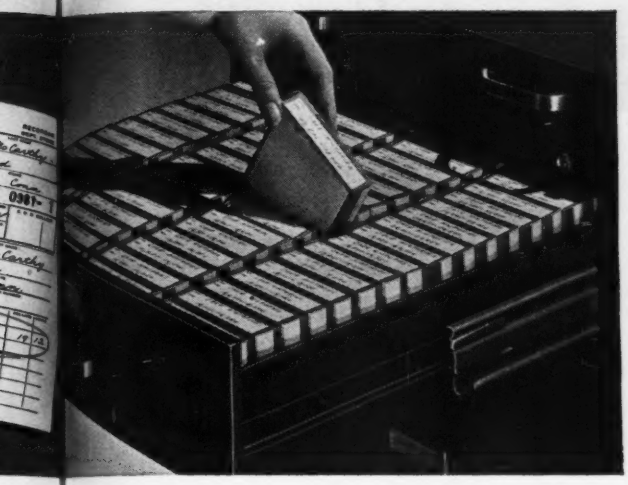
RECORDAK

(Subsidiary of Eastman Kodak Company)

originator

YOU SAVE VALUABLE FLOOR SPACE. No need to let files of statements, sales checks, cash receipts, credits clutter up departments. With Recordak, you can "file" these items in 2% of present space . . . keep them right at your finger tips.

YOU SAVE TIME FOR ADJUSTMENT CLERKS. With Recordak Salescheck Billing, clerks get very few questions about charges. They can answer these questions quickly, too, from the microfilmed master record of sales checks, credits, and statements.



k Salescheck Billing

Important savings these . . .

And if you want to know more about the Recordak equipment that makes these savings possible . . . the microfilming machine that pioneered the application of photography to retailing . . . write us for the book, "50 Billion Records Can't Be Wrong."

RECORDAK CORPORATION
(Subsidiary of Eastman Kodak Company)
350 Madison Avenue, New York 17, N. Y.

ator modern microfilming—and its application to retailing

The Month in Retailing

(*Continued from page* 64)

Harbor. Much depends on how quickly they can fill in the blank or faded areas in their buying experience, and the Merchandising Division of NRDGA is concentrating on that job.

Off the press this month is Arthur Einstein's "The Story of Unit Control", probably the most-needed book of the year in retailing. Mr. Einstein is vice president and director of merchandising and publicity of the Strouss-Hirshberg Co.

Next on the Division's schedule is "Retraining Our Buyers," which will be published about April 1. This will contain three sections: the first on the general nature and principles of the retraining job; the second devoted to merchandise budgets and open-to-buy; the third containing an outline of the successful training courses for merchandising executives which are conducted at Wolf & Dessauer and Strouss-Hirshberg.

For the guidance of ready-to-wear buyers the Division has in preparation, and will publish on May 1, its first semi-annual Merchandising Calendar. This will be a month-by-month chart showing market opening dates, and dates for initial stock, peak stock, intensified promotion, first markdowns and clearances.

Returns are in from the Division's poll of members on the standard corset box sizes proposed by the Committee on Corset Merchandising Problems, headed by Sylvia Werner of A. M. C. A preliminary check indicates fairly general approval of the sizes proposed. These are: for girdles, 16 x 5½ x 2, and 19 x 5½ x 2; for junior girdles, 14 x 5½ x 2; for corselets, 22 x 7 x 2⅜, and 19 x 5½ x 2.

Standard box marking proposed by the Committee is also generally approved by members. After the analysis of returns is complete the Committee will take up the retail recommendations with the corset industry.

Retail Buying Plans. Herbert O. Bergdahl, executive vice president of A. M. C., told a group of plastics goods manufacturers early this month that the downward trend in transactions comes from consumer resistance to high prices, poor styling and poor quality, and that these factors hold true for all lines of merchandise. Discussing retail planning for a buyer's market, he said:

"During the war period all of us at retail and probably you also in the manufacturing and wholesale field have done business with too many sources. Many retailers are taking steps to correct this situation, with a view to working in greater volume with the manufacturers whose merchandise has given satisfactory results in sales—which is another way of saying satisfaction to the consumer."

M. O. R. Deadline. The Controllers' Congress aims to get the 1946 Merchandising and Operating Results off the press by May 1, but it's been having trouble getting questionnaires back from stores on time. The deadline for Form B is April 1.

The Leased Department Survey begun by the Congress in 1946 was published early this month. It contains everything that 177 reporting stores had to tell about operating statistics, contract arrangements, and expense policies. Tabular information is broken down by store volume groups, and covers 50 different departments. The report shows that leased departments account for an average of 5.4 per cent of total store volume, and that the average reporting store has six such departments.

The C. C. will hold its annual convention in Los Angeles this year—the dates, June 11-13, the place, the Hotel Biltmore.

(*Continued on page* 70)

AWARDS. At left, Herbert J. Tily, who retired last month from the presidency of Strawbridge & Clothier, Philadelphia, receives a parting gift from the Philadelphia Merchants Association. Ellis A. Gimbel, chairman of the board of directors of Gimbel Brothers, Inc., made the presentation. Mr. Tily tendered his resignation 67 years to the day after he took his first job with the store. At right, William S. Street, president of Frederick & Nelson, receives the Paul Bunyan Trophy of the Seattle Chamber of Commerce in recognition of his store's service in focusing national attention on Seattle. Mr. Street is now a candidate for re-election to the Board of Directors of the United States Chamber of Commerce, representing Domestic Distribution. The store's fashion extravaganza last spring was the big point scorer in gaining the trophy.

the Escalator promotes Sales

The Escalator promotes sales and contributes to more efficient retailing in many ways:

1. It extends a pleasant invitation to ride up or down.
2. It gives shoppers a bird's-eye view of several departments.
3. It promotes inter-floor circulation.
4. It provides first floor accessibility for upper floors or basement space.
5. It makes shopping easy and enjoyable throughout the store.

• Escalator service is appreciated and talked about by customers. It enables them to see more displays and more merchandise. In turn, they buy more.

If you want your store to enjoy the distinct competitive advantages which only the Escalator can provide, call your Otis representative today.

Nineteen of the 195 Escalators installed since V-J Day are in the following stores:

The Baker Company, Minneapolis, Minnesota

Gimbel Bros., Inc., Philadelphia, Pa.

Hale Brothers, Inc., Oakland, Calif.

Olds, Wortman & King, Portland, Oregon

Henry Morgan & Co., Ltd., Montreal, P. Q.

Otis ELEVATOR COMPANY
OFFICES IN ALL PRINCIPAL CITIES

The Month in Retailing

(*Continued from page* 68)

New Association Service. The first bulletin from NRDGA's new Employee Relations Service went to members this month. The Service will operate within the setup of the Store Management and Personnel Groups and will deal with personnel administration problems affecting employer-employee relationships. Regular bulletins will be issued on a subscription basis. The Service will report on trends in employee benefit and welfare activities; pertinent court decisions; store experience with collective bargaining. Leonard Rovins has joined the staff to handle the new work under the direction of George Plant. Mr. Rovins, a former lieutenant colonel in the infantry, specialized in labor relations in his prewar law practice. He was connected until recently with the R. H. Macy & Co. veterans' counseling program.

The Store Management and Personnel Groups will hold their mid-year convention in Pittsburgh, at the William Penn Hotel, May 26-28.

Credit Expansion. As the basis of a sound credit policy to provide the benefits of Regulation W without government control, community credit policies are being studied by retailers and their credit managers. However, Gordon Dakins, manager of the Credit Management Division, reports that doubt exists in many quarters as to the legality of such agreements, which may be regarded by the Department of Justice as violations of the Anti-Trust statutes. Consult your attorney before putting your name on the dotted line.

Permanent budget plans are attracting increasing interest. First used by Bloomingdale's, New York, the idea has been adopted by several other AMC stores, including Wm. Filene's Sons Co., Boston, Mass., Stix-Baer Fuller Co., St. Louis, John Shillito Co., Cincinnati and F. & R. Lazarus Co., Columbus. P. B.A. allows a customer a revolving amount of credit which he may use at any time. He pays a fixed amount monthly over a period from 6 to 12 months, plus a service charge. As payments are made, the customer can make additional purchases up to the limit arranged. Success of the plan has been such that a number of stores are expected to install it this year.

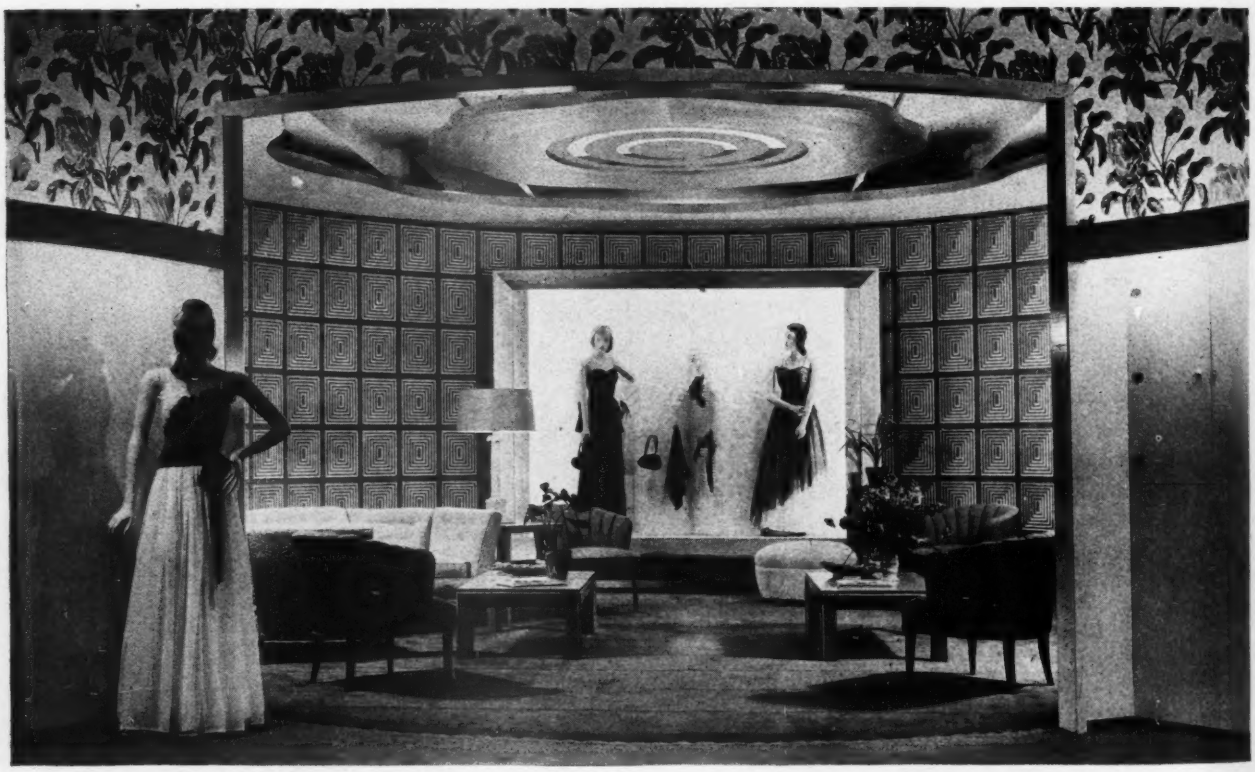
The Credit Management Division will hold its annual convention in Cleveland (Hotel Cleveland) May 21-23.

Sales Promotion Division. Promotion Exchange is now appearing monthly, and has adopted a newsletter format.

The Division has scheduled its Mid-Year Clinic for June 26-27-28 at the Palmer House, Chicago. The time coincides with the Display Market there, and it is hoped that something solid can be accomplished on the Division's display research project.

The NRDGA and NAEA committees on retailer-newspaper problems will present a joint program at the Clinic. B. Lewis Posen of Hochschild Kohn is chairman of the NRDGA committee. He wants to hear more from sales promotion men on their newspaper problems, and asks them to answer these questions:

(*Continued on page* 72)



Young Clevelander Apparel Shop, just opened at the William Taylor & Son Co.

Illustrating the Dennison policy of modernization with minimum investment

For years, Dennison has specialized in the development and production of equipment which has enabled marking rooms to increase efficiency without expensive change-overs. That is what is meant by Dennison's basic policy of "Modernization With Minimum Investment."

A striking illustration of this may be found in Dennison Dial-Sets which print code and price information on a complete range of string tags without the necessity for setting type or handling ink. A wide variety of items from infants' wear to washing machines—controlled or not controlled—may be marked more quickly, more cleanly and more accurately. The proper model in your marking room will go a long way to increase the scope of an already effective installation.

The Dial-Sets—like all Dennison marking room equipment—conform to specifications laid down by marking room operators themselves. Each model has been designed to do a particular job in meeting the requirements of modern merchandising.

Dennison HEADQUARTERS FOR MARKING ROOM EQUIPMENT

DENNISON MANUFACTURING COMPANY ● 52 HOWARD ST., FRAMINGHAM, MASS.

The Month in Retailing

(*Continued from page* 70)

What do you consider your most difficult problem with newspapers? What problems do you have (and what suggestions for their solution) with cuts, production, printing, types, color printing, service, rationing? Would you welcome instructions from your newspaper to your staff in the preparation of art work and production methods? Would you welcome research assistance from your newspapers?

Send the answers to Howard Abrahams, manager of the Sales Promotion Division.

World Trade. A committee of the United Nations Economic and Social Council will meet in Geneva next month to draft a charter for the International Trade Organization. Through February and March governmental hearings have been conducted in various cities to sound out the feelings of American business on proposals for the charter. Support of the *principle* of freest possible world trade—through reciprocal trade agreements and through the formation of the international organization—appears to be general, but in specific commodity fields objections have been voiced on the traditional theme that low-cost competition from abroad would be ruinous. To meet this objection all future trade agreements made by this country will contain an "escape clause", permitting the President to withdraw or modify any concession made in such an agreement if imports of the article in question cause or threaten to cause serious injury to domestic producers.

The "escape clause" has its own dangers, but the compromise should help to prevent sideline sniping at the world trade program. Of those interests which still cling to their arguments in favor of protective tariffs, a State Department representative said recently: "They are in the position of one who thoughtlessly throws a million dollars down the drain while he worries that he may some day lose a dime. Surely there will be more advantage, for everyone in this country, in big markets than in little markets, in freedom than in regimentation, in economic peace than in economic war. And this is the advantage that the American trade program is designed to gain."

Echo from Never-Never Land. One way and another, the OPA used to have an awful lot of trouble with Bob Seidel and the W. T. Grant Co. Grant's obstinacy was never more clearly illustrated than when it refused to admit that a shrimp was an oyster stew. In February, 1945, one of the Grant stores sold a fried shrimp platter for 65 cents. Grant's price for seafood had previously been established, according to the OPA, when it sold an oyster stew for 45 cents. Now it seemed that even if the store wanted to put lobster on the menu, it would have to go for the same 45 cents. Oddly, nobody could convince Grant that this made sense. The OPA fined the store $75. Grant wouldn't pay. Then the agency brought suit for $2500. The courts tried to please everybody by substituting a fine of $6.50. Grant wouldn't pay that either. Time passed, lawyers got so they couldn't stand the sight of an oyster—and last month, two years and about 50,000 words later, the U. S. Emergency Court of Appeals unanimously upheld the company's position and declared the OPA regulation illegal. A shrimp is *not* an oyster stew.

This transparent Plexiglas display-storage unit consists of a series of covered drawers, any of which may be withdrawn with or without its cover or merely opened by a slight pull. The drawers may be combined in units to fit any desired space. Marketed by Merchandise Presentation, New York.

Fantasy in Fashion. A ready-to-wear manufacturer's temerity in producing a $100 thousand fashion motion picture for exclusive department and specialty shop showing has led him to the payoff window with a fistful of approval tickets from enthusiastic store owners. This has been Sam Friedlander's experience with "Fantasy in Fashion", a color film devoted to spring fashions.

The initial release was limited to 50 stores guaranteeing them exclusive rights in their respective cities for the film and for the fashions shown. Deliveries were guaranteed on initial orders for all of the models shown. This guarantee was one of the prime selling factors for the promotion in view of the fact that the film itself was accepted sight unseen by the stores involved. Plans are in the works now for a fall film.

Smaller Stores Division. April 15 is the date for the next meeting in the popular Smaller Stores series of dinner conferences. Place, the Hotel Pennsylvania, time 6:30 P.M. George P. Gable, president of the William F. Gable Co. of Altoona, will speak on the subject, "1947 Guide-posts for Profitable Operation."

People. John C. Williams, 44-year old president of L. Bamberger & Co., has been chosen "Newark's outstanding citizen for 1946", by the Advertising Club of New Jersey.

H. I. Kleinhaus, for 14 years general manager of the Controllers' Congress, has opened offices in New York as a consultant on retail management problems.

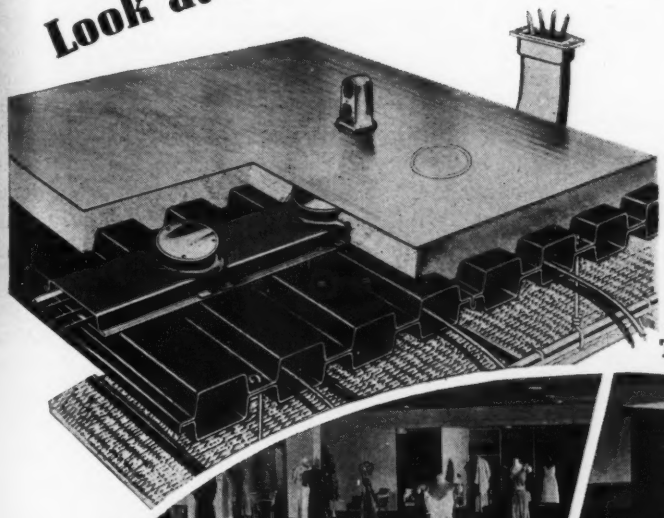
Gerald Goldstein is now controller of L. Bamberger & Co., Newark, upped from the position of assistant.

Macy's, New York has moved Leonard M. Bernstein to its Selling Service Branch as a preliminary to his assumption of duties as a Division Superintendent.

At Marshall Field, Chicago, William E. Heaton has become assistant to the general merchandise manager and Harry W. Krotz, Jr., has moved to Mr. Heaton's old position of expense assistant to the general management.

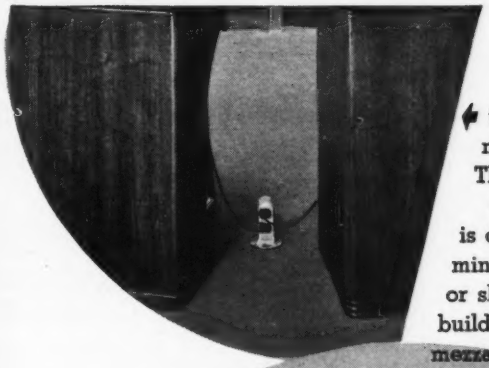
(*Continued on page* 74)

Look at the Merchandising sense of this Q-floor



• The steel cells and the header that crosses over them are the Robertson Q-Floor. The "Q" stands for Q-Change and Quick-in. Consider *Quick-Change* in terms of your business. The header carries telephone, power and other electrical wires. It is related to the cells so that any six-inch area of the entire floor can be tapped for an outlet. An electrician need only drill a small hole to establish an outlet exactly where needed. The whole job takes a few minutes.

A selling floor can be changed overnight to a non-selling floor—or vice versa. Without trenches, fuss or muss.



With virtually unlimited electrical availability over the entire exposed floor, your building cannot become electrically outmoded. Consider this in terms of yet unannounced electrical devices and new electric sales aids. Think of television, for example, in your new store!

Quick Installation of Q-Floor, too, is a money matter. Q-Floor is delivered ready to install. Two men can lay 32 sq. ft. in half a minute. Construction is dry, fireproof, dust-free, quiet without forms or shoring. The speed gives an over-all saving of 20 to 30% of building time. You gain also through earlier revenue. For adding mezzanines, the lightweight, dry, clean construction is unrivaled. Possible damage to merchandise from water, fire and dirt is reduced to a minimum.

Thousands of Robertson Q-Floors are now serving all over the country. The price is right. The construction is right. And the year-after-year flexibility of floor layout has become part of modern merchandising. Check with your architect or a Robertson representative. Q-Floor Fittings may be seen at any General Electric construction materials distributor's. Please refer to the nearest Robertson office for delivery dates, however. For literature, write:

H. H. ROBERTSON CO.

2410 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Service

THE EASIEST THING FOR A BUILDER TO FORGET - *Floors are what a Building is for*

The Month in Retailing

(*Continued from page 72*)

At A. M. C., Vincent Arcuri has been promoted to the post of divisional market supervisor of Upstairs Domestics.

David E. Duncan has been appointed store manager of Macy's-Parkchester in New York.

Stores. In Cincinnati the first concrete has been poured for the new 10-story building for the H. & S. Pogue Co., a major part of the store's two million dollar expansion and modernization program for 1947. The new building will house virtually all of Pogue's non-selling sections, releasing more than 100,000 sq. ft. of floor space in the main store. Fur storage vaults with 20,000 garment capacity are among new facilities to be lodged in the service building.

The William Taylor Son & Co. store in Cleveland has its new junior department, "The Young Clevelander Apparel Floor", in operation. It occupies half of the fifth floor, an area previously devoted to stock rooms and receiving rooms. Members of Taylor's own staff designed the new layout and supervised its completion.

Marshall Field opened a one-story annex to its Evanston store last month to house its frozen food department and an enlarged appliance section.

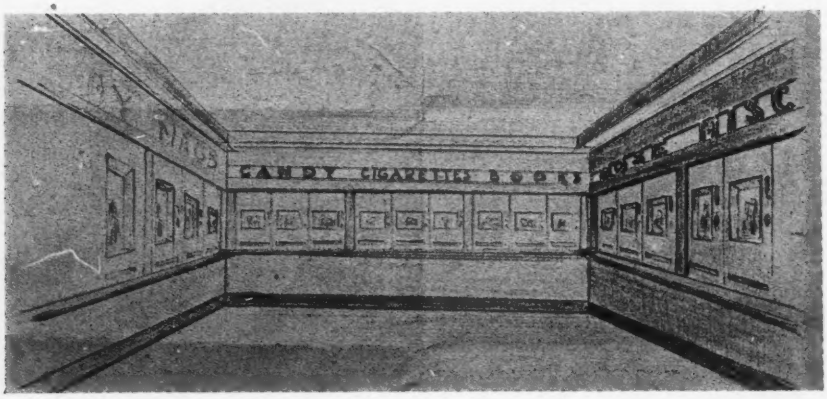
Macy's and Gimbel's are still adding new lyrics to their "I can do anything better than you" song. Last month the applause was led by the Reynolds Pen people. Macy's made a joke of the nationally advertised price on the ball-points with a three-in-one offer at $2.79 or a single at 98 cents. Gimbel's went them a nickel better next day with a 94 cents offering and went further by introducing a sleeper brand at 88 cents. Before the day was out a low of 84 cents had been reached and both stores were scraping the bottom of the barrel for the last of their "Rockets".

After the flurry Reynolds price-fixed the pen back to 98 cents, announcing that they had written $5 million in orders while the two old rivals were playing hob with their snickersnees.

Army Week. The Army urges retailers to help promote recruitment during Army Week, April 6-12. With the ending of the draft law, needed minimum strength of 1,070,000 men must be maintained by voluntary enlistments. This is a public service campaign which retailers regard as a continuance of the national defense work they carried on during the war.

Discounts. Stores and the NRDGA have settled into a systematic routine of protest and explanation to manufacturers on the matter of discount changes. In a number of cases it has become clear that manufacturers had failed to realize just why retailers care so much about the maintenance of discounts. When it was explained to them, they withdrew the discount changes. Many stores are doing a fine educational job among their suppliers, with individual letters and by circulating the Association's booklet, "Established Discounts to Retailers."

In spite of retail concern about discount losses, many manufacturers reported in the early stages of this campaign that individual retailers were not making any protest to them about discount changes. This emphasized the necessity for top management to check all the way down the line to see that store policy was correctly interpreted to suppliers. The same kind of check-up will be necessary if store heads seriously want manufacturers to understand the strength of customer resistance to present price levels.



The idea of automatic vending sections for department stores is revived by the International Vending Machine Corp. of Brooklyn. A machine soon to go into production vends merchandise in packages, operates on quarters, taking up to $2.00, and makes automatic change. One man acts as cashier and service man. The sketch shows how a group of the machines could be set up in an automatic selling section.

Traffic Group. The annual clinic of the Traffic Group will be held at the Netherland Plaza Hotel, Cincinnati, April 7 to 10. All the important current problems in traffic, receiving, marking and warehousing will be discussed.

The Revised Manual on Receiving Department Operations will be ready for distribution by April 15.

Education in Quality. The National Consumer-Retailer Council held an all-day conference on February 28th on the clothing problems of farm families. Clothing specialists from 46 states met with representatives of Allied Stores Corp., W. T. Grant Co., Melville Shoe Corp., J. C. Penney & Co., and Sears Roebuck & Co. The feature of the session was a clothing demonstration, in which merchandise of several categories was shown in different price lines, the retailers pointing out and explaining the quality improvement represented by each higher price. It is hard to understand why stores do not build informative selling displays along these lines, especially in fairly staple items like work clothes, housedresses, children's underwear.

WHEREVER YOU GO—
YOU SEE BURROUGHS MACHINES

WORKMAN SERVICE, INC., of Chicago, Minneapolis and Los Angeles, serves more than 1500 business concerns throughout the country, handling business "overloads" in calculating, tabulating, typing and transcribing. Since 70% of this huge volume of work is calculating, the use of Burroughs Electric Calculators is significant. More than 300 Burroughs Electric Calculators are in use or on order to handle assignments accurately, swiftly, at low cost.

In business after business, Burroughs has won the respect of those responsible for efficient handling of figures. They turn to Burroughs first—because they have learned that Burroughs *is* first in meeting their needs:

First in Machines . . . with the most complete and flexible line, the latest time-saving features, the most modern machine developments.

First in Counsel . . . with thorough knowledge of procedures, most progressive ideas to meet changing conditions.

First in Service . . . with the best trained service men, the finest service methods, the most convenient service arrangements.

These three factors underlie the satisfaction that Burroughs offers to business, large or small. The stepped-up tempo of Burroughs research and development will continue to reward Burroughs users with the finest in machines, counsel and service.

Burroughs Adding Machine Company, Detroit 32, Michigan.

1st Burroughs
IN MACHINES
IN COUNSEL
IN SERVICE

FIGURING, ACCOUNTING, STATISTICAL AND CASH REGISTERING MACHINES • NATIONWIDE MAINTENANCE SERVICE • MACHINE SUPPLIES

Pre-Packing (*Continued from page* 24)

of windows breaking and becoming brittle due to age and temperature changes are being lessened by technical progress in use of films. The loading of transparent envelopes and handling of overwraps in packing operations are now being speeded up by use of automatic equipment. Already appreciable savings are being enjoyed especially for some types of soft goods and the whole development of automatic packaging of retail merchandise is still in its infancy.

Machine packing is the backbone of the food and drug industry. Large textile manufacturers have just recently started to investigate its possibilities. The advancing costs of labor have meant that in some cases high speed automatic packaging was actually the cheapest method of preparing the product for distribution. Machines that fold, load, set up packages, build packages around product, or label are welcome in an industry that has largely been based on manual operations.

For example, the hosiery trays of Cannon Mills, Inc. and Shannon Hosiery Mills, Inc. are automatically over-wrapped with cellophane on equipment similar to that used on cigarettes.

Items such as underwear, crib sheets, and towels, over-wrapped with transparent film, represent another automatic operation that is being given considerable attention, for the development replaces manual loading of envelopes. Taking the product from a conveyer belt, a machine forms the envelope around it at speeds of 45 a minute and seals the opening or not, as desired. Using this type of equipment a manufacturer can package with a fraction of his former labor force, and the capital investment involved is small enough to permit the equipment to pay for itself in a short time.

Planning for Customer Convenience

The Pepperell sheet carton is also an example of an operation that is semi-automatic, but its importance to a retailer lies not so much in its economies at the mill, as in the fact that its functional planning means convenience and simplicity to the retailer and to the consumer.

The first step, of course, in developing this packaging program was to establish a consumer unit. Pepperell determined by surveys that 72 per cent of customers purchase sheets in units of two, so the project aimed at a prepack for two sheets. One single package was then designed which would hold all types and sizes of sheets. Methods of folding were devised to make this possible. This single sized carton was developed with varying color combinations and designs to indicate varying grades of sheets and the label indicates the sizes of sheets.

This standardization of carton size goes a long way toward simplification in the mill and in the store. It was simple to adapt the single unit to high speed loading on the packing line and the carton is automatically sealed after inspection.

The sealed package, and not each individual sheet, is price marked in the store. At the counter, the sealed package is easy to sell because of complete consumer information on one panel. If, however, the customer wishes to see and feel the sheets, the carton can be opened and reclosed, to be returned to stock or taken home. The box is strong enough to permit delivery by the store with no wrapping beyond attaching the salescheck. This in an example of a functional prepack complete from the manufacturer's back door to the customer.

A great deal of research, in which department stores played a large part, prefaced the choice of the construction and design. It shows what can be accomplished when thorough study is made of the functions of a box and the solution is aimed at the best interests of the customer, the store, and the manufacturer.

As merchandisers, you have probably given interested attention to other new types of packages arriving in your stores. You have no doubt observed many developments in use of color for sales appeal. Cannon Mills sheet cartons are excellent examples of this.

Not so long ago, "stock" boxes were designed to blend with store fixtures. We know now, as McCall's Magazine points out, "When a women shops she has a picture in her mind." When she buys sheets, she isn't thinking of shelves or counters but of her own room—decorator colors, floral prints, maybe even pastel rugs. Sheet packaging should suggest femininity along the lines of color promotions in the home furnishings field. In other words, a good package must be a promise of what is *inside* more that a reflection of the surroundings *outside*.

The all-important pre-packing of hard goods has made phenomenal progress since the war. Many of these companies learned the "know how" of materials handling doing government orders. For most of them, the chief objective is simplification. Most durable goods packaging is strictly utilitarian, for sample selling and delivery from stockrooms. A few brands like EKCO and Pyrex, have the protective packaging enclosed in colorful outer cartons for gift appeal. One package in this type of merchandise is receiving a great deal of attention—the strong, durable, yet effectively designed package for the General Mills Betty Crocker automatic iron. Vivid and vigorous in its bright red polka dot pattern, it defies being hidden in a stockroom. The design tells a merchandising story that kitchens are cozy and ironing is fun. This package actually helps sell.

The packages for the Libby-Owens "Tally-Ho" set of glassware and Nutone door chimes, are worthy of special attention, particularly to those whose job it is to plan the packing of glassware and fragile merchandise for delivery. Though these items are often purchased as gifts, they are difficult and expensive to pack attractively by the store. Here, the manufacturer does the packing for the retailer and adds to the gift appeal. The specially designed "cushion packages" dramatize as well as protect the merchandise.

Good packaging, for the requirements of retailers with warehouse and stockroom operations, must always mean comprehensive labeling. Containers for the lampshades and lamps of the W. F. B. Johnson Company have excellent identification.

How Will Your Volume Be When CLOTHING SELLING Gets Competitive?

Beat previous figures by featuring clothing with superiorities you can demonstrate

You'll sell more suits to more people in the coming years, if you cash in on this proved fact: people buy more goods when they get a *plus benefit.* Remember how other industries attracted a greater share of the consumer's dollar when selling used to be competitive? They made toasters that pop, refrigerators that light up, cars that sparkle with chrome—all plus benefits.

You can offer plus benefits in the *clothing* field when you feature GOODALL. Only Goodall gives you so many plus benefits that men want . . . so many superiorities that you actually can *demonstrate* as shown on this page. So get in the habit *now* of pushing GOODALL summer clothing—clothing made from fabrics *blended-for-performance*—and you'll get greater results when selling gets competitive.

YOU CAN DEMONSTRATE IT'S 22% COOLER

TAILORED BY GOODALL
Palm Beach
REG. U. S. PAT. OFF.
TRADE MARK OWNED & CLOTH MFD. ONLY BY GOODALL-SANFORD, INC.

YOU CAN DEMONSTRATE IT SHEDS WRINKLES LIKE MAGIC

A Goodall Fabric
SPRINGWEAVE
TAILORED BY GOODALL

Summer Clothing Headquarters

GOODALL COMPANY

Cincinnati 2, Ohio

Well-Fed Workers (*Continued from page* 19)

But here is a point worth noting. This country does not possess the land, farm labor, farm equipment or industrial service to agriculture—to say nothing of the weather—to produce enough grass, hay, cereals and beans to support an animal population which would enable 140,000,000 people to eat out of refrigerators and thus enjoy the meals they like best and are best for them. In 1946, our biggest crop year, economists estimate our production of cereals was hardly half enough to provide for everyone the kind of meals we like best.

But I like to look deeper into my own refrigerator than just to see the food and animals and hay and corn there are in it. In addition to being a symbol of the great industrial art of low-temperature storage, it also represents many other arts which depend for their existence on what people eat.

Nearly half the gainfully employed people in this country are engaged in producing and handling food. The size of this figure has a direct relationship to diet.

Let me illustrate. When dry beans are stored on a pantry shelf and boiled for dinner, they represent no great amount of industrial activity nor many jobs. On the other hand, when oats are grown and fed to cows and milk produced, a great chain of industrial activity is set up and many jobs are created.

Someone has to build the barn for the cows. Someone has to manufacture the milking machines and the cream separator. The milk has to be cooled and the cream provided with cold storage. A lot more rubber and gas and overalls and shoes are used transporting milk from a farm every day of the year than in hauling beans once a year. When the cream is made into ice cream and a carton of the ice cream eventually lands in your refrigerator, the process represents the application of a dozen industrial arts and the labor of scores of individuals.

Contrast the amount of industrial activity and jobs supplied by a bread-and-bean diet as opposed to meals built out of the normal contents of a home refrigerator The idea may come to you that at least a part of the cost of a good diet is self-liquidating in the industrial activity it creates and the jobs it furnishes.

Here in America today we need a common goal towards which we all can pull together. From a purely selfish angle, retailers have as deep an interest as do industrialists, farmers or laborers in a well-fed, well-nourished American public.

The whole situation is such as to challenge the best thought of public-spirited citizens everywhere. We can work together towards the goal of an ever-normal refrigerator by:

(1) Support of public school and college research and education in human nutrition. New York State already has made great progress in this direction through the Cornell University School of Nutrition. Food education has been expanded through the state's entire school system. What New York is doing, other states will do and soon we shall have diet education in all schools. One product of such education will be more and more men and women who understand the economics of food production and utilization. They will supply our food leadership of the future.

(2) Assumption of responsibility for delivering to consumers more and more of the inherent qualities of food. This calls for continuous study of harvesting and marketing methods.

(3) Instruction of the public through advertising and other means in the fundamentals of good eating and in the health, energy and social satisfactions which flow freely from an adequate diet.

(4) Stimulation of demonstrations of optimum human nutrition through such mass feeding programs as school lunches, industrial plant cafeterias and public institutions.

(5) Use of the grade of the American diet as a reference point in evaluating proposed agricultural legislation and proposed farm marketing schemes. Unless these programs tend to feed America better, they will fall of their own weight.

Measuring Display Efficiency (*Continued from page* 18)

level as against the same merchandise shown flat on top of the counter. A test of men's ties shown flat on a counter as opposed to the same ties shown raised on a rack to eye level resulted in six per cent more people *looking* and two per cent more people *stopping* at the raised display. This result throws further light on the premium value of certain locations within departments which may be used by display as a positive traffic stopping and selling force.

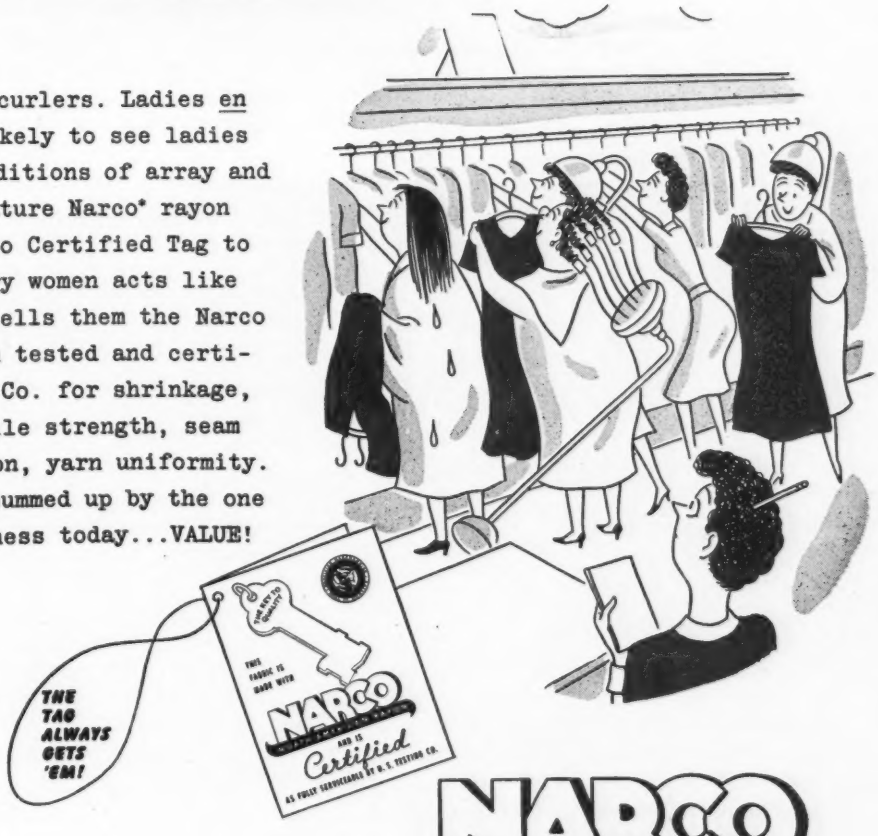
However, once the merchandise reaches eye level, tests show that display technique increases the per cent of people who look, but the present per cent of people who stop is unchanged. In this test men's ties were shown at eye level in a dramatized situation as opposed to a mass of the same ties shown alone. Eleven per cent of the total traffic exposed stopped at each display.

Another test of merchandise at eye level involved the use of a closed ledge display behind the selling counter. As may be presumed, there was no effective difference in the traffic stopping power of the different display techniques used in this area. A dramatized display of a shirt and tie ensemble was tested against a merchandise display of ties alone. The same percentage of traffic *looked* at each display and practically the same percentage *stopped* at each display. Here there is little hesitancy in stating a conclusion. Rather than to use closed ledge displays for direct selling efforts, use these areas for institutional effect.

(*Continued on page* 80)

THE MAGIC OF A NAME

Ladies in dryers and curlers. Ladies en deshabille. You're likely to see ladies in all states and conditions of array and disarray when you feature Narco* rayon dresses. For the Narco Certified Tag to today's quality-hungry women acts like catnip to a cat. It tells them the Narco rayon fabric has been tested and certified by U.S. Testing Co. for shrinkage, color-fastness, tensile strength, seam slippage, construction, yarn uniformity. And all that can be summed up by the one word that means business today...VALUE!



NARCO
NORTH AMERICAN RAYON

*Narco is the registered trade-mark of the North American Rayon Corporation, 261 Fifth Avenue, New York, N. Y.

And since today store modernization plans are part and parcel of every retailer's equipment, you might consider in your plans the desirability of converting this waste selling space into stockkeeping units.

The treatment of merchandise from an informative point of view is being considered from many angles today. Too little is known about the proper treatment of merchandise information in display. Tests on infants' dresses were designed to measure the effect of changes in eye level as well as in the display treatment of merchandise information. In the eye level tests, infants' dresses were shown flat on top of the table, and then were shown on an inclined plane or ramp—in other words, the dresses were shown flat and then raised. In two stores the results conflicted. In one store three per cent more people *stopped* at the ramp or raised display. In the second store seven per cent more people *stopped* at the flat display.

However, in a third test when infants' dresses were shown alone—flat—as against infants' dresses shown in use on a wire figure attached to an inclined ramp eight per cent more people *stopped* at the display showing the merchandise raised and in use. This is a significant result. Merchandise information consists not alone in telling the customer the price, the size, the fabric content, or any other number of facts that may be listed for merchandise items. Merchandise information, in its broadest and most effective concept, shows the customer what the merchandise will do to satisfy her needs, and how it will look and perform according to her requirements. This test shows that displays which lack appreciation of the customers' point of view in showing merchandise alone, or not in use, are not as effective as displays which visualize for the customer how the merchandise will look in use. It was reported that customers in this store's infants' dress department would pick up dresses from other tables, come over to the ramp display, and place the dresses over the wire figures in an attempt to visualize what the merchandise would look like in use.

Testing Display Cards

The sign card operation in your store, if it is similar to that of many stores, is conducted somewhat like this:

1. The buyer fills out a sign card requisition on which he states the price and merchandise information.
2. The sign card requisition goes to the advertising department for approval and, theoretically, to have the sign card copy written. Usually this becomes a rubber stamp operation wherein, if you are lucky, errors in spelling are caught.
3. The sign card requisition goes to the sign shop to be printed and is returned to the selling department and put on display.

The effect of this process is to make the buyer a copywriter—a job for which he is not paid, and for which he is the first to admit he is not qualified.

In a sign card test, conducted like all of the others discussed herein, a main floor aisle table for displaying metal belts was used. A traffic count was maintained, and a record of buyers was kept by a special salesgirl assigned only to that aisle table. The sign card which we found being used by the store was used in the test. Three words were added to the alternate sign card. The sign card, which was 5 x 7 inches, was a relatively unimportant part of the aisle table display. The sign cards were rotated on an hourly basis while the check of traffic and buyers was maintained. The store's sign card said: "Bright Metal Belts 98¢". Our sign card said: "Brighten Your Dress—Smart Metal Belts 98¢". Twenty-four per cent more merchandise was sold by the latter sign card which informed the customer that smart metal belts would brighten her dress.

Training Films for Stores (*Continued from page* 14)

full page ad in the Sunday paper, will become suddenly parsimonious when the training director asks for a few hundred dollars to buy needed equipment or training aids. Yet, the effectiveness of the costly ad, in terms of both good-will and sales, depends upon whether or not a good job is done at that crucial point, the point-of-sale. In considering whether the cost of a motion picture training film should be assumed, the store management must break down the cost, considering how many years the film will remain useful, how many selling employees will benefit by it in that time, and by what percentage their selling capacity is likely to be increased as a result of the training. In most cases, it will be evident that a good motion film eventually will justify its cost, as a paying investment, on the basis of sales volume alone.

The job of a commercially produced motion picture sound film of top technical quality runs about $1200 to $1400 per minute of running time, according to one retail training director who recently has supervised such productions. The favored length for a training film is not over 20 minutes. According to this estimate, then, such a commercially made film would cost at most about $28,000. (As greater film production is obtained, costs probably will decrease.)

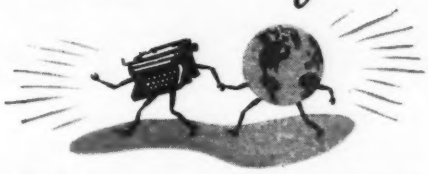
Some films of this type have been made by commercial film companies for less; indeed costs are very flexible because subject matter and its treatment vary so widely. One of the large commercial organizations which produces tailor-made films for individual stores, claims to be able to produce a 15-minute film at a cost to the store of $4,000 to $5,000. The same organization has available ready-made general training films which may be bought for about $200, for material totaling over an hour's running time.

Home-Made Films

Not all stores desiring individual films have depended upon commercial talent in producing them. Some have

WHAT MAKES UNDERWOOD

"Typewriter Leader of the World"?



A research-minded organization that has never stopped improving its products. For more than fifty consecutive years Underwood has enjoyed unchallenged leadership, based on a long list of engineering "firsts" in typewriter advantages.

Setting the standard of performance by offering typewriters with greater flexibility, speed, accuracy and durability than were elsewhere available . . . by always keeping a stride ahead.

Volume of satisfied users . . . understanding the typewriting problems of business in general, and secretaries in particular. More than 6,000,000 Underwoods, reaching all corners of the globe, have been helping to speed the world's business.

World-wide sales and services, convenient to everybody in the United States and in the principal cities of the world. Experience and time have taught the business world that an Underwood is always the happiest choice among typewriters.

Underwood's post-war Standard . . . a masterpiece of typewriting engineering. It brings you *Rhythm Touch* . . . a wonderful addition to the many Underwood features you've always enjoyed. *Rhythm Touch* is a new typing concept . . . a delightful new experience in typewriter performance. Speed seems effortless. Fingers move easily over the new perfectly-balanced keyboard.

These are the things that make Underwood America's first-choice typewriter . . . that make Underwood "Typewriter Leader of the World."

Typewriters . . . Adding Machines . . . Accounting Machines
Carbon Paper . . . Ribbons and other Supplies

Underwood Corporation

One Park Avenue, New York 16, N. Y.
Underwood Limited, 135 Victoria Street, Toronto 1, Canada
Sales and Service Everywhere

Copyright 1947, Underwood Corporation

undertaken to make their own, using a 16 mm. movie camera operated by a store person who has made a hobby of photography, and selecting the cast from the store's own personnel. Such a film, besides costing much less than a tailor-made commercial production, also often has additional human interest appeal for the staff. By this procedure there have been turned out at minimum cost some very successful if less professional finished products which have fully accomplished the purpose for which they were intended.

However, the hazards of the "home-made" approach must not be underestimated. Many technical pitfalls await the inexperienced. A few of the usual faults in untrained film work are: jerky action, imperfect lighting, misplaced dramatization, meaningless and distracting detail, poor relationship of sequences, and disappointing sequences which have to be re-shot.

The caliber of the direction can make or ruin a film. Professional direction has the added advantage of an objective viewpoint. For example, a store head or other retail executive has a natural tendency to be swayed by unconscious vanity in the size and importance of the company, and to underplay the more humble appeals that are of keenest interest to the trainee.

The importance of a skilled film cutter can hardly be overstressed. Many of the professionals in this craft have been Hollwood-trained in the major studios, and have developed an uncanny ability for spotting weak or unconvincing sequences, and for cutting and rebuilding a film until it is packed with power.

A good production can come only out of good coordination, and the full-fledged commercial film company has the further advantage of being a closely integrated working team. The closest cooperation between the store representative and the film company staff is necessary, and it is very essential that the store's liaison person shall have full authority to make decisions. The attitude of the producing company is equally important to the store; high technical quality in a training film is of no consequence if the film fails to put across the message of the store in question.

Commercial Producers

Commercial film producers fall into three general classifications.

1. *The complete producer,* with a trained staff to cover every function. This type of company usually is able to make available to the client store a fund of practical advice gleaned from experience. There is a danger, though, that in working with so closely knit an organization, the client may feel himself at a disadvantage in getting his own ideas incorporated in the film.
2. *The free-lance producer.* An individual with some film producing experience sells a store the idea of having a training film produced. When he has obtained a contract, he hires free-lance script writers, and gets some studio to produce the film for him. The lack of organization in this type of set-up usually proves disadvantageous to the store.
3. *The director-writer combination.* In this case, the organization consists only of directing and script-writing talent. The film still must depend upon an outside studio for its production. If the director knows his business and is in a position to coordinate the production, this sort of arrangement can work out satisfactorily for the store.

How to Go About It

"Whether a motion picture is being made for an individual store, a group of stores, or a store-and-manufacturer combination, the first step toward a successful result is to set up a good committee." This is the advice of a training director who at present is engaged in supervising the production of his second major training film. The members of the committee should bring to the planning of the film the viewpoints and suggestions of all of

(*Continued on page* 84)

Creative Buying

(*Continued from page* 15)

It has been my experience to work with dress buyers whose advent in the showroom was the invariable signal for the appearance of the top designer and the boss, both of them hungry for her ideas. Many a great dress has thus been re-created from elements already existent and needing only to be re-arranged into their most effective combination. The progressive manufacturer of ready-to-wear is well aware of the advantage which is his when he can add the expert opinion of a good buyer to his designer staff "for free." The new number created in conference with her is his to sell to the whole market except in the city of his unpaid expert. Her reward, as far as the manufacturer is concerned, naturally is limitation of the number to her for her trading area. No buyer is such a genius that she can lift herself entirely out of competition by the character and the assortment of her merchandise bought on equal competitive terms. But insofar as she has been able to do creative buying, she has assured herself of an exclusive field of success.

But whether creative buying concerns the women buyer buying apparel or the man buying men's wear or electrical appliances, 1947 is going to be a great year for the creative buyer. It is an inspiring thought that before the year's end there will be many new and highly desirable articles of merchandise offered for sale which at this moment of time are merely dormant, maybe subconscious, ideas in the minds of our buyers. Perhaps some of them aren't even born yet. But they will be, and we—and our customers—will be buying them—for Christmas. In our new consumer economy, the retailer whose buyers collectively do the outstanding job of creative buying in the months to come will, in my opinion, automatically place himself in nomination for the high honor of being the "Merchant of the Year."

There Are GOOD and BAD Paper Draperies!

Which can you afford to sell to your customers?

Nothing can give a good idea a bad name any quicker than poor merchandise! Good paper draperies are a good idea. They work. They're practical. The rapidly increasing use of paper draperies all over America is creating one of the most attractive new sources of fast-turning profits in modern merchandising. Women *like* them —will buy them again and again—if they're *good!*

But *bad* paper draperies can unsell *any* woman on the whole idea! They can give you and the draperies *both* a black eye! Because they fail to deliver the promised satisfaction, and only create ill will! Whereas *good* paper draperies can build you sales, good will, and profitable repeat business for years to come!

Here are the qualities that spell the *difference* between *good* and bad paper draperies—between satisfied customers and disappointed purchasers.

CHECK THESE IMPORTANT QUALITIES: (Found Only in TRIMZ and Other GOOD Paper Draperies)	
GOOD MATERIAL: Fabric-like paper; stronger, heavier, scientifically plasticized; fine, soft, rich-looking.	✓
GOOD PRINTING: Clear, fade-proof designs that do not "print through"; draperies look well on both sides.	✓
GOOD PATTERNS: Variety of designs and colors for any room; style-tested by home decorating authorities.	✓
GOOD PROCESSING: Flame-proof—mildew-resistant; will not dry out or "sweat," colors won't run.	✓
GOOD HEMS: Securely hemmed headers; tear-proof edges, latex-cemented, reinforced with nylon thread.	✓

BACKED BY THE FAMOUS TRIMZ GUARANTEE!

Want the whole story? Write for the dramatic merchandising plan on the new TRIMZ line of *good* Paper Draperies!

TRIMZ COMPANY, Inc.
Division of United Wallpaper, Inc., Chicago 54, Ill.

TRIMZ
REG. U. S. PAT. OFF.

READY-TO-HANG
Paper Draperies

Training Films for Stores (*Continued from page* 82)

the different departments in the store whose interests are involved. The combined ideas of such a group are sure to be more sound than the ideas of any one person. However, contact with the film producing company must be through one person only, whose responsibility it is to translate the ideas and decisions of the committee. Uusally this person is the training director.

The consecutive steps in making a film through a commercial producer, are approximately as follows:

1. The need for the film is determined, and the general theme is set.
2. An advisory committee is established. Responsibility and authority for the supervision of the production is placed in the hands of a store representative.
3. A complete outline of the film's objectives is drawn up, and a preliminary script as to film content is prepared.
4. The first draft of the script is written by the film company's script writer.
5. The script is submitted to the committee and revised as many times as necessary. It may require rewriting six or eight times before it is thoroughly acceptable. Last minute minor changes may even be made by the film director and the store representative while the film is being shot.
6. The store representative sits in on the film company's planning of the sets and selection of the cast.
7. The film is shot. The store representative should be on hand to collaborate closely with the director.

Supplementary Visual Aids

Many other visual aids besides films possess training merit. In their special applications, some of them are superior to films. Many of them are particularly useful as supplementary material.

Maps, charts, graphs and diagrams are easy to make, and can give a clear birdseye view of statistics and other similar factual information. They may be dramatized by movable symbols, like colored thumb tacks, flags, or arrows.

Photographic blow-ups, posters, and blackboard sketches serve to emphasize important points, and are sufficiently large in scale to be seen by the average trainee audience.

Working models often are helpful because they can be used actively in practice demonstrations.

Various projection devices make it possible for the instructor to throw upon a lighted screen enlargements of store forms, drawings, and even fabric weaves. Many of these work strictly on a reflection principle. Others involve transparencies, upon which other objects can be imposed by the instructor, giving a sense of motion.

Printed matter provides information in permanent form which the trainee can study at leisure and keep for future reference. The material covered by a film may be summarized in a brief outline, or it may be expanded into more detailed form in a manual. By memory association, photographic illustrations taken from the film itself will help to fix in mind the entire content of the film.

Trainee Preparation and Follow-Up

Regardless of its form, any visual aid is just that—an aid. It cannot be depended upon to do the complete training job. This is as true of a motion picture film as it is of a graph or a poster. Learning by doing is more effective than learning by seeing, and unless the trainee puts into practice what the film has taught, he soon forgets the training. Therefore the showing of a film must be carefully dovetailed with other phases of the training program, and whenever possible with the practical performance of daily work.

To get the most profitable results from a training film, the following procedure is suggested:

1. Show the film during working hours, or pay for the extra time the employee devotes to the showing. A receptive state of mind is a prerequisite to learning.
2. Prepare the trainee through a short introductory talk. State why the film is being run. Show how the employee will benefit from it. Explain that his understanding of the film will later be tested (this will make him alert to the message.)
3. Show the film.
4. Hold open discussion on the points brought out. Encourage employee participation.
5. Give the trainee printed material to supplement the film.
6. Make it possible for him to put his training to practical use.
7. Within a week or two, test the employee to see whether he remembers the training.
8. Hold periodic reviews of the material involved. This may consist in a reshowing of the film, in discussing the points one by one in successive meetings, or by covering the material in outline.

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